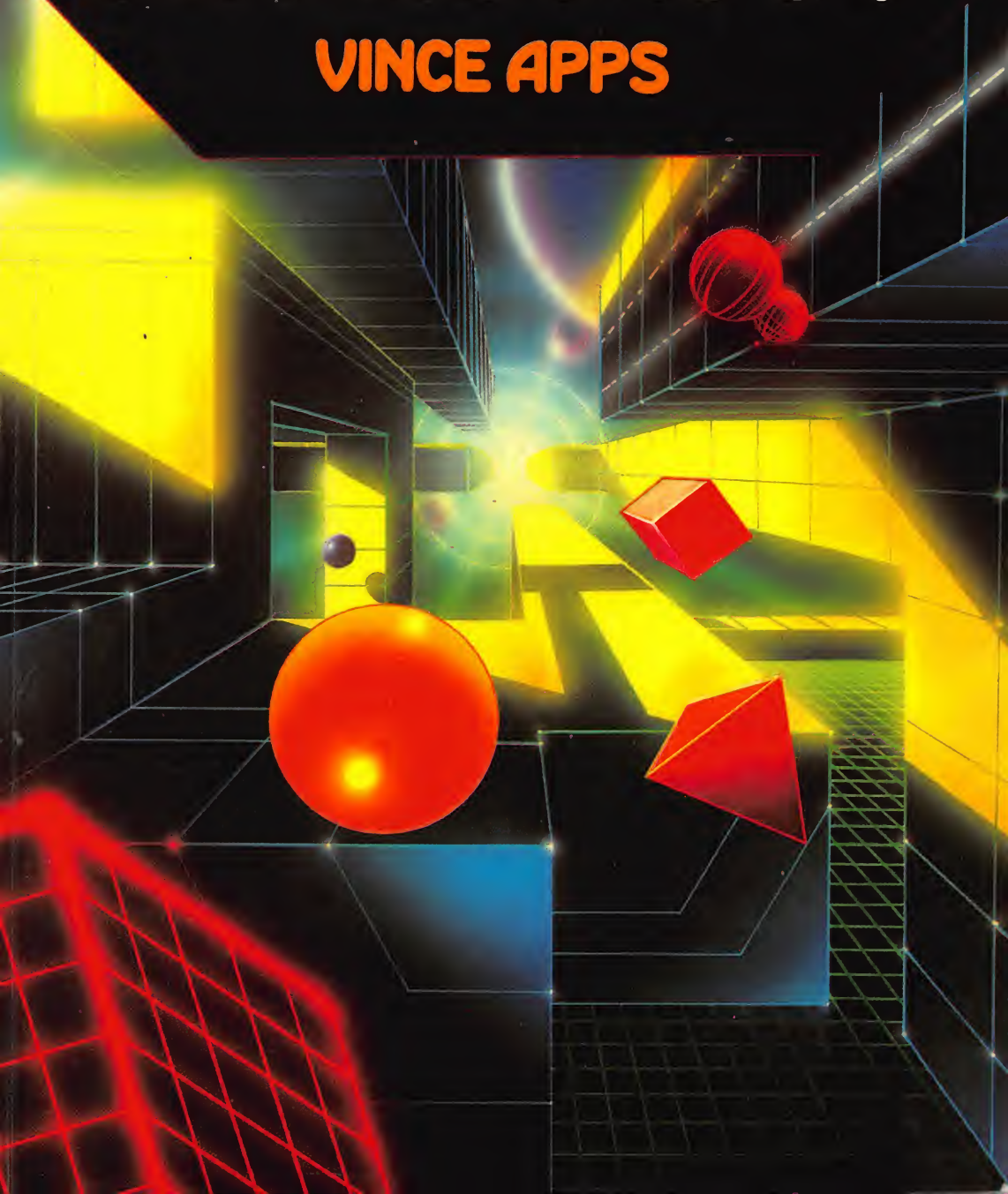# 40 EDUCATIONAL GAMES FOR THE COMMODORE 64

VINCE APPS

40 Educational Games
For The Commodore 64

40 Educational Games For the Commodore 64

Vince Apps

Contents

Foreword

This is not a 'how to use your machine' book as we assume that the user will already have a working knowledge of the main commands on the Commodore 64 keyboard. The intention of this collection of programs is to help the young user to become more familiar with their computer, improve their knowledge and have fun at the same time. None of the programs is of great length as we are aware that younger users will want to see the results of their planning as soon as possible.

Virtually all of the programs will have a 'games' element to encourage the user to beat the machine. In some programs the junior programmer will be typing in the answers to the questions which the machine will eventually ask. In order to remove the certainty of a correct answer however, the computer will be requested to make random choices from the information given.

As can be seen from the contents list the programs cover a wide area of interest including mathematics, geography, grammar, weights and measures and music.

The programs have been designed so that they can be adapted to include more complex questions and so increase the user's ability.

Introduction

This collection of programs has been written for junior users to pit their wits and test their knowledge.

We have designed these programs so you can learn how to use your Commodore 64 computer by typing in your own information. None of the programs is too long to input into your machine as the idea is to help you sharpen up your mind - not to turn you into a typist.

Once the program is in the machine you will be able to begin answering the questions and improving your knowledge. The faster you respond the quicker the computer will ask you the next question.

You will be surprised how quickly you will learn how to use your Commodore 64, and how soon you will want to move on to the next program.

As soon as you know how to enter these programs - and beat the Commodore 64 - you will be able to change the content in the lists and make things even more difficult for yourself.

Things to remember

Your Commodore 64 works with it's own language called BASIC. If you try to 'speak' to your machine in another language then nothing will happen, except that you will get a nasty message which says 'error in line'.

Programming is not like writing an essay for class. Your teacher might let you off with a mild caution if you miss out a comma - your Commodore 64 will not.

You have to follow, exactly, the 'characters' shown on the program listings in this book. If you miss a comma, or enter a dash by error,

then the program will not work. You cannot put in any other instruction and expect the machine to work. If you have typed in your program and the Commodore 64 will not 'run' as instructed, then you will have to check your 'list' against the book for 'bugs'. Check carefully before you decide to throw your machine out of the nearest window!

We know that the programs listed in the book are 'bug free' because, not only have we checked and double-checked them, we have reproduced them from our Commodore 64 using a mechanical printer.

We did this because it makes things easier for you and also for our own printers when they produce our books. If you are really having trouble however you can always ask your parents. They **should** be able to help you.

Cassette Storage

Once you have gone through 'inputting' your programs you can store them on cassette tapes for future use.

Cassette tapes will take up some of your pocket money but they mean that you will always have quick access to your list of programs.

Having your programs on tape also means that, when you have improved your programming skills, you will be able to rewrite the programs we have given you.

1

Counties
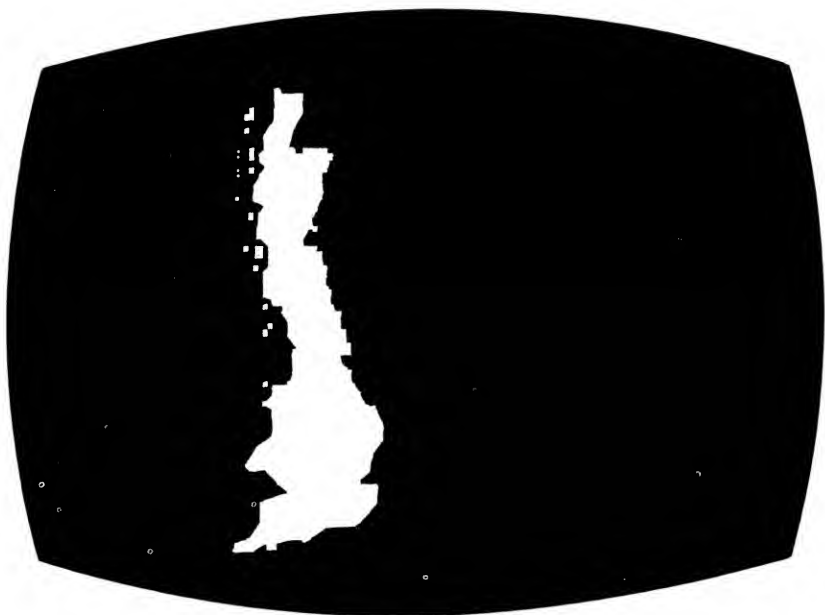
A few years ago the Government changed the names of most of the counties in England, Wales and Scotland. Some people still call them by their old names so we have come up with this program to help you make sure you know the new names and where they are.

Your computer knows where Gwent is - do you?

How to play

The computer will draw an outline map for you and give you a list of ten county names to choose from.

The computer will then choose, at random, an area for you to identify. A flashing sign will indicate the area in question. Type in your answer in upper case (capitals).

Tries and scores are shown on the screen.

If you are wrong it will be a case of try, try again until you get it right.

Programming Notes

This program uses the same map drawing routine as 'towns' and 'compass'. See the introduction to 'towns' before typing in 'counties'. The rows for county names are held in the data statements 10240 to 10390. If your county is not here, why not try and insert it's name and position.

Program

```
10 REM **************
20 REM *            *
22 REM *  COUNTIES  *
24 REM *            *
25 REM **************
27 DIMSX(16),SY(16),COUNTY$(16)
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,6:POKE53281,15:PRINTCHR$(14
4)
40 TR=0:SC=0
50 GOSUB9000:GOSUB7000
60 FORT=1TO16
70 POKESP+21,0:POKESP,SX(T):POKESP+1,SY(
T):POKESP+21,1
75 PRINTLEFT$(AT$,10)SPC(23)"
     "
80 PRINTLEFT$(AT$,10)SPC(23)CO$(T)
90 FORQ=1TO15:FORDL=1TO50:NEXTDL:POKESP+
21,0:FORDL=1TO50:NEXTDL:POKESP+21,1:NEXT
100 NEXTT
110 R=INT(RND(1)*16)+1
120 PRINTLEFT$(AT$,3)SPC(20)"SCORE:"SC
130 PRINTLEFT$(AT$,3)SPC(30)"TRIES:"TR
135 PRINTLEFT$(AT$,10)SPC(23)"
     "
140 PRINTLEFT$(AT$,10)SPC(23)"WHICH COUN
TY"
```

```
145 PRINTLEFT$(AT$,12)SPC(23)"
     "
150 PRINTLEFT$(AT$,12)SPC(23)"IS THIS ?"
155 PRINTLEFT$(AT$,14)SPC(23)"
     "
157 POKESP,SX(R):POKESP+1,SY(R)
160 PRINTLEFT$(AT$,14)SPC(23);:INPUTANS$
165 IFASC(ANS$)<65 ORASC(ANS$)>90THENANS
$=MID$(ANS$,2):GOTO165
170 TR=TR+1
180 IFANS$=CO$(R)THENGOTO240
190 :
200 GOSUB5000:PRINTLEFT$(AT$,12)SPC(22)"
NO! THAT IS WRONG"
210 FORDL=1TO100:POKESO+1,RND(1)*256:NEX
TDL:POKESO+1,0
220 POKESO+1,0:GOSUB5000
230 GOTO120
240 GOSUB5000:PRINTLEFT$(AT$,12)SPC(22)"
    CORRECT!      "
250 FORA=1TO4:FORB=1TO2:FORC=1TO5:FORD=1
TO6:POKESO+1,A*B*C*D:NEXTD,C,B,A
260 SC=SC+1
270 POKESO+1,0:GOSUB5000
280 GOTO110
5000 REM CLEAR PART OF THE SCREEN
5010 FORT=5TO23:PRINTLEFT$(AT$,T)SPC(20)
"                    ":NEXTT:RETURN
7000 REM SET UP SPRITE
7010 SP=53248
7020 POKESP+21,0
7030 FORT=0TO63:POKE832+T,0:NEXTT
7040 POKE832,96:POKE835,240:POKE838,240:
POKE841,96
7050 POKE2040,13:POKESP+21,1:POKESP+16,0
:POKESP+39,0
7060 FORT=1TO16:READSX(T),SY(T),COUNTY$(
T):NEXTT
7070 REM SET UP SOUNDS
7080 SO=54272:FORT=0TO28:POKESO+T,0:NEXT
T
7090 POKESO+5,9:POKESO+6,240:POKESO+24,1
5:POKESO+4,33
7100 RETURN
9000 REM DRAW MAP OF BRIAIN
9005 PRINTCHR$(147)
```

```
9010 FORT=1024TO1944STEP40
9015 FORTT=0TO18
9020 READX
9030 POKET+TT,X:POKE(T+TT+54272),5
9040 NEXTTT,T
9050 RETURN
10000 DATA 32,32,32,32,32,32,32,32,252,9
8,98,32,32,32,32,32,32,32,32
10010 DATA32,32,32,32,32,254,32,32,160,1
60,236,32,32,32,32,32,32,32,32
10020 DATA32,32,32,32,32,126,32,254,160,
236,32,32,32,32,32,32,32,32
10030 DATA32,32,32,32,58,118,108,160,160
,160,98,160,160,252,32,32,32,32,32
10040 DATA32,32,32,32,58,124,108,160,160
,160,160,160,160,126,32,32,32,32,32
10050 DATA32,32,32,32,46,32,160,160,160,
160,160,160,160,32,32,32,32,32,32
10060 DATA32,32,32,32,32,108,108,160,160
,160,160,160,126,32,32,32,32,32,32
10070 DATA32,32,32,32,32,32,245,160,160,
160,160,120,126,32,32,32,32,32,32
10080 DATA32,32,32,32,32,126,244,118,160
,160,160,160,252,32,32,32,32,32,32
10090 DATA32,32,32,32,32,32,126,254,160,
160,160,160,160,97,32,32,32,32,32
10100 DATA32,32,32,32,32,32,32,160,160,1
60,160,160,160,252,32,32,32,32,32
10110 DATA32,32,32,32,32,32,32,126,119,2
54,160,160,160,160,121,32,32,32,32
10120 DATA32,32,32,32,32,32,32,255,32,11
8,160,160,160,160,160,123,32,32,32
10130 DATA32,32,32,32,32,32,32,32,32,32,
254,160,160,160,160,160,32,32,32
10140 DATA32,32,32,32,32,32,32,32,32,32,
160,160,160,160,160,223,32,32,32
10150 DATA32,32,32,32,32,32,32,126,248,2
54,160,160,160,160,160,160,223,32,32
10160 DATA32,32,32,32,32,32,32,226,160,1
60,160,160,160,160,160,160,252,98,123
10170 DATA32,32,32,32,32,32,32,32,160,16
0,160,160,160,160,160,160,160,160,160
10180 DATA32,32,32,32,32,32,108,254,160,
160,160,160,160,160,160,160,160,160,236
10190 DATA32,32,32,32,32,124,236,251,160
,160,160,160,160,160,160,160,160,160,32
```

```
10200 DATA32,32,32,32,32,32,32,32,124,12
0,160,160,160,160,160,192,192,96,123
10210 DATA32,32,32,32,32,32,32,254,247,2
54,160,160,160,160,160,160,160,160,126
10220 DATA32,32,32,32,32,32,108,160,160,
160,160,160,160,120,239,120,226,32,32
10230 DATA32,32,32,32,32,254,239,251,236
,32,32,99,32,32,32,32,32,32,32
10240 DATA96,175,"CLWYD"
10250 DATA73,235,"CORNWALL"
10260 DATA79,199,"DYFED"
10270 DATA99,206,"GWENT"

10280 DATA129,222,"HAMPSHIRE"
10290 DATA143,158,"HUMBERSIDE"
10300 DATA163,216,"KENT"
10310 DATA105,168,"MERSEYSIDE"
10320 DATA165,186,"NORFOLK"
10330 DATA135,146,"YORKSHIRE"
10340 DATA116,116,"BORDERS"
10350 DATA116,105,"FIFE
10360 DATA124,76,"GRAMPIAN"
10370 DATA96,60,"HIGHLAND"
10380 DATA111,114,"LOTHIAN"
10390 DATA116,96,"TAYSIDE"
```

2

Village


```
            YEAR:  1

POPULATION:  100   WHEAT:  113



*******       ........       ........
         ........       ........




29 of your people have died of
  starvation!
```
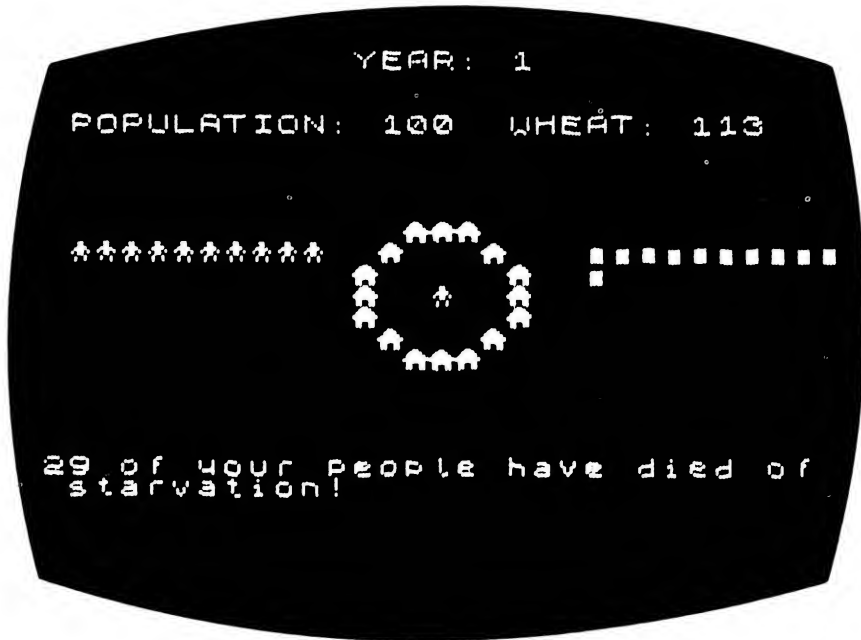
You have just been appointed the chief of a village of natives whose lives depend on their crops of wheat. If you manage the crops properly then the village will prosper and the population will increase but should you make a mistake then people will starve, people will die and you will be attacked by an angry mob.

By the way, your people need about 2½ bags of wheat each to survive for a year. Give them less and they starve and they won't like that. If you give them 5 bags each they will be pleased and may forgive you for past mistakes.

Look out as well for the rats which always attack your crops in the warehouse. The more you store, the greater will be the losses from rats.

How to play

The screen will show you that you are in your first year as leader. You will begin with a certain population and a certain amount of wheat. There are symbols for people and sacks of wheat and each symbol represents ten units. The computer will ask you how much of your wheat you wish to sow. Remember to keep some back as it might be a bad harvest.

The computer will then tell you how much wheat you have grown and you will be asked how much you wish to give your people.

Try and survive ten years as leader.

Program

```
10 REM ********************
20 REM *     VILLAGE       *
22 REM *                   *
24 REM *                   *
25 REM ********************
30 POKE52,48:POKE56,48:CLR
35 POKE53281,0:POKE53280,8
40 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
50 GOSUB7000:PRINTCHR$(147):GOSUB10000
130 SF=0
140 POP=100
150 WHT=250
160 YR=1
170 ANG=0
180 AE=2.4
190 GOSUB900
200 GOSUB1000
210 REM # IS A GRAPHIC CHARACTER
220 PRINTLEFT$(AT$,8)SPC(17)"###"
230 PRINTLEFT$(AT$,9)SPC(16)"#   #"
240 PRINTLEFT$(AT$,10)SPC(15)"#      #"
250 PRINTLEFT$(AT$,11)SPC(15)"#       #"
260 PRINTLEFT$(AT$,12)SPC(15)"#       #"
270 PRINTLEFT$(AT$,13)SPC(16)"#    #"
280 PRINTLEFT$(AT$,14)SPC(17)"###"
290 PRINTLEFT$(AT$,11)SPC(18);CHR$(36)
294 GOSUB300
```

```
296 GOSUB330
300 PRINTLEFT$(AT$,4)SPC(1)CHR$(159);"PO
PULATION: "CHR$(5);POPCHR$(157);"   "
306 WHT=INT(WHT+0.5)
310 PRINTLEFT$(AT$,4)SPC(23)CHR$(30);"WH
EAT: "CHR$(5);WHT;CHR$(157);"   "
320 PRINTLEFT$(AT$,1)SPC(16)CHR$(152);"Y
EAR: "CHR$(5);YR;CHR$(157);"   "
322 RETURN
330 HVS=INT(RND(1)*3)+1
332 IFHVS=1THENA$="POOR"
334 IFHVS=2THENA$="FAIR"
336 IFHVS=3THENA$="GOOD"
338 M$="    THE WITCH-DOCTOR PREDICTS A
              "+A$+" HARVEST":GOSUB1100
339 PRINTLEFT$(AT$,21)SPC(0)"
                            "
340 POKESO+1,25:POKESO+4,33:FORTT=1TO20:
NEXTTT:POKESO+4,32
341 PRINTLEFT$(AT$,21)SPC(0);
342 INPUT"   HOW MUCH SEED WILL YOU SOW
";SD$
344 IFVAL(SD$)<1THENGOTO339
345 SD=VAL(SD$)
350 IFSD>WHT THEN M$="YOU DO NOT HAVE "+
STR$(SD)+"BAGS":GOTO365
360 IFSD>POPTHENM$="THERE ARE NOT ENOUGH
 PEOPLE TO SOW            "
361 IFSD>POPTHENM$=M$+STR$(SD)+" BAGS":G
OTO365
362 GOTO370
365 GOSUB1100:GOTO339
370 CRP=INT(RND(1)*2*HVS*SD)
372 WHT=WHT-SD
374 GOSUB300:GOSUB1000
376 FORDL=1TO2000:NEXTDL
380 M$="YOUR CROP WAS "+STR$(CRP)+" BAGS
 OF WHEAT":GOSUB1100
384 IF(HVS<>1)AND(CRP<1.5*SD)THENM$="EVE
N +ITCH-DOCTORS CAN BE WRONG!":GOSUB1100
400 WHT=WHT+CRP
404 GOSUB300
405 GOSUB1000
407 PRINTLEFT$(AT$,20)SPC(0)"
                            "
408 PRINTLEFT$(AT$,20)SPC(0);
```

```
409 POKESO+1,30:POKESO+4,33:FORTT=1TO20:
NEXTTT:POKESO+4,32
410 INPUT"  HOW MUCH WHEAT WILL YOU GIVE
 TO YOUR       PEOPLE    ";ET$
411 IFVAL(ET$)<1THENGOTO408
412 ET=VAL(ET$)
413 IFET>WHTTHENM$="YOU DO NOT HAVE "+ST
R$(ET)+" BAGS!":GOSUB1100:PRINT:GOTO406
414 IFET<POP*AETHENM$="     YOUR PEOPLE
ARE HUNGRY!":GOSUB1100:SF=1
416 IFET>POP*AE*2THENM$="    YOUR PEOPLE
ARE HAPPY!":GOSUB1100:ANG=ANG+1
420 WHT=WHT-ET
422 GOSUB300
424 GOSUB1000
430 FORJ=25TO29 STEP2
440 FORK=5TO10
450 POKESO+1,20-K:POKESO+4,33:FORTT=1TO2
0:NEXTTT:POKESO+4,32
460 PRINTLEFT$(AT$,K)SPC(J);CHR$(38)
480 PRINTLEFT$(AT$,K)SPC(J)" "
490 NEXTK
500 FORDL=1TO50:NEXTDL
510 NEXTJ
512 RTS=INT(RND(1)*WHT/4)
514 M$="RATS ATE "+STR$(RTS)+" BAGS OF W
HEAT":GOSUB1100
516 WHT=WHT-RTS
518 GOSUB300:GOSUB1000
520 IFSF=0THENGOTO700
530 DD=INT(RND(1)*.5*(POP*AE-ET))+1
534 IFDD>=POP THENDD=POP-1
540 M$=STR$(DD)+" OF YOUR PEOPLE HAVE DI
ED OF              STARVATION!":GOSUB1100
544 POP=POP-DD
550 GOSUB300:GOSUB900
560 M$="    YOUR PEOPLE ARE ANGRY!":GOS
UB1100
570 ANG=ANG+1
580 IFANG=3THENM$="YOU HAVE LET TOO MANY
 PEOPLE STARVE."
585 IFANG=3THENM$=M$+"     YOUR PEOPLE W
ANT A NEW LEADER!  ":GOSUB1100:GOTO870
590 FORJ=1 TO POP/10
600 IFJ>10 THENGOTO680
610 PRINTLEFT$(AT$,9)SPC(J+2)" "
```

```
620 PRINTLEFT$(AT$,8)SPC(J+2)CHR$(36)
630 POKESO+1,K+5:POKESO+4,33:FORTT=1TO20
:NEXTTT:POKESO+4,32
640 FORDL=1TO5:NEXTDL
650 PRINTLEFT$(AT$,8)SPC(J+2)" "
660 PRINTLEFT$(AT$,9)SPC(J+2)CHR$(36)
670 FORDL=1TO10:NEXTDL
680 NEXTJ
690 GOTO740
700 PC=INT(RND(1)*WHT*.5/AE)
710 M$=STR$(PC)+" PEOPLE JOINED YOUR VIL
LAGE!":GOSUB1100
720 POP=POP+PC
730 GOSUB300
740 GOSUB900
750 SF=0
760 YR=YR+1
770 M$="ANOTHER YEAR HAS PASSED.":GOSUB1
100
790 IFYR=11THENGOTO820
800 GOTO294
850 PRINTLEFT$(AT$,17)SPC(0)"WELL DONE!
YOU COMPLETED YOU 10 YEARS   IN OFFICE."
860 PRINTLEFT$(AT$,20)SPC(0)"     YOUR S
CORE IS ";INT((POP+WHT/AE)*10):GOTO1150
870 FORJ=POP/10TO12
872 PRINTLEFT$(AT$,9)SPC(J)CHR$(36)
874 FORDL=1TO5:NEXTDL
876 PRINTLEFT$(AT$,9)SPC(J)" "
878 NEXTJ
880 PRINTLEFT$(AT$,10)SPC(13)CHR$(36)
881 PRINTLEFT$(AT$,10)SPC(13)" "
884 PRINTLEFT$(AT$,11)SPC(14)CHR$(36)
885 FORDL=1TO10:NEXTDL
886 PRINTLEFT$(AT$,11)SPC(14)" "
888 FORJ=1TO5
890 PRINTLEFT$(AT$,11)SPC(15)CHR$(18);"
"
894 PRINTLEFT$(AT$,11)SPC(15);CHR$(36)
896 NEXTJ
898 GOTO1150
900 P$=CHR$(36)
910 FORJ=9TO15
930 FORK=1TO10
940 IFPOP<K*10+(J-9)*100THENP$=" "
950 PRINTLEFT$(AT$,J)SPC(K+2);CHR$(156);
P$
```

```
952 IFPOP<K*10+(J-9)*100THENGOTO960
955 POKESO+1,K+5:POKESO+4,33:FORTT=1TO20
:NEXTTT:POKESO+4,32
957 FORTT=1TO20:NEXTTT
960 NEXTK
970 NEXTJ
980 RETURN
1000 P$=CHR$(37)
1010 FORJ=9TO15
1030 FORK=1TO10
1040 IFWHT<K*10+(J-9)*100THENP$=" "
1050 PRINTLEFT$(AT$,J)SPC(K+24);CHR$(158
);P$
1052 IFWHT<K*10+(J-9)*100THENGOTO1060
1055 POKESO+1,K+10:POKESO+4,17:FORTT=1TO
20:NEXTTT:POKESO+4,16
1060 NEXTK
1070 NEXTJ
1080 RETURN
1100 PRINTLEFT$(AT$,19)SPC(3);M$
1110 FORDL=1TO2000:NEXTDL
1112 SP$="
                                      "
1114 SP$=SP$+SP$
1120 PRINTLEFT$(AT$,19)SPC(3);SP$
1130 RETURN
1150 PRINTLEFT$(AT$,23)SPC(3);
1155 INPUT"PLAY AGAIN";Q$
1160 IFLEFT$(Q$,1)="N"THENEND
1170 PRINTCHR$(146)
1180 GOTO130
7000 REM *** READ IN GRAPHIC DATA ***
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
34)OR1
7060 FORI=0TO4*8-1:READA:POKE12568+I,A:N
EXTI
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
8000 DATA 24,60,126,255,126,102,102,102
8010 DATA 24,24,60,90,24,36,36,102
8020 DATA 0,0,60,60,60,60,60,0
8030 DATA 28,18,57,57,56,56,56,16
```

```
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

3

Multiplication and Division
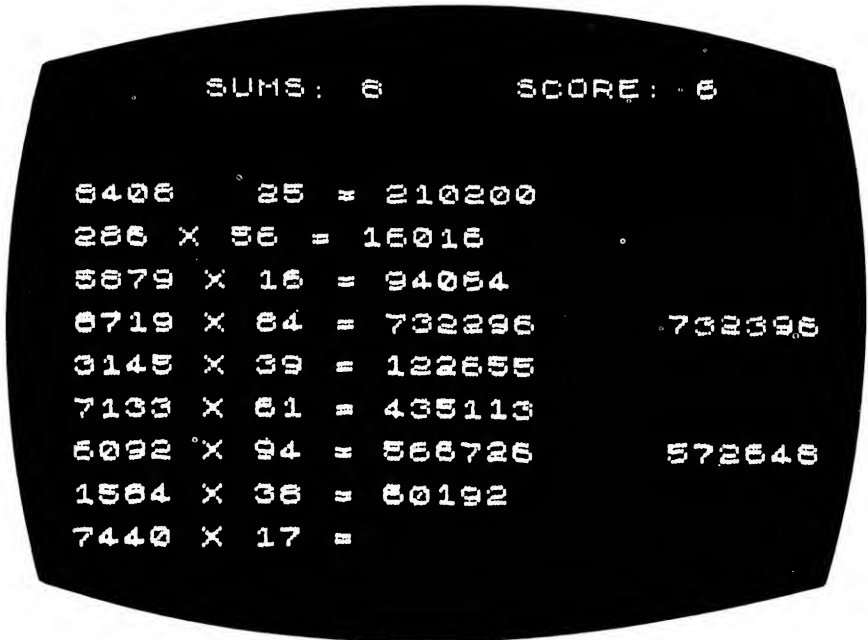
The first thing you have to do before you begin to play this brain teaser is to put your calculators away in a cupboard and bring out your pencils and paper. This game is a test of your mental ability and agility. No cheating, now, by using any help.

How to play

Your computer will begin by asking you if you wish to play multiplication or division.

Type M or D then press RETURN.

You will then be given a simple multiplication question such as 1436 x 26.

If you are correct, you will hear a triumphant sound and you will see Correct in green.

If you are wrong, you will hear a rather nasty noise and the screen will display the word WRONG in red.

The program will run for a total of twenty sums and will then give your grand total of correct answers against attempts.

If you wish to change from one type of sum to another you can wait until you have answered your twenty questions then press RUN.

Program

```
10 REM *******************
20 REM *  MULTIPLICATION  *
22 REM *        AND        *
24 REM *     DIVISION      *
25 REM *******************
26 POKE52,48:POKE56,48:CLR
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 GOSUB7000:GOSUB10000
37 POKE53280,7:POKE53281,3:PRINTCHR$(147
)
40 SM=0
50 SC=0
100 :
110 DATA0,24,0,255,255,0,24,0
120 DATA0,1,3,6,140,216,112,32
130 DATA195,102,60,24,60,102,195,129
140 POKESO+4,17:FORT=1TO40:NEXTT:POKESO+
4,16
150 PRINT"       MULTIPLICATION OR DIVIS
ION "
155 INPUT"       M OR D (+ RETURN)  ";C
$
160 IFLEFT$(C$,1)="M" THENS$="X":GOTO190
170 IFLEFT$(C$,1)="D"THENS$=CHR$(35):GOT
O190
180 GOTO150
190 PRINTLEFT$(AT$,5)SPC(6)"
                          "
195 IFS$=CHR$(35)THENGOTO260
```

```
200 R1=INT(RND(1)*9000)+100
210 R2=INT(RND(1)*100)+1
220 POKESO+4,17:FORT=1TO40:NEXTT:POKESO+
4,16
230 CA=R1*R2
240 PRINTLEFT$(AT$,5)SPC(6)R1" ";S$;" "R
2;" = ";
250 GOTO310
260 R1=INT(RND(1)*100)+1
270 R2=INT(RND(1)*100)+1
280 CA=R1
290 PRINTLEFT$(AT$,5)SPC(6)R1*R2;" ";S$;
" ";R2;" = ";
300 POKESO+4,17:FORT=1TO40:NEXTT:POKESO+
4,16
310 INPUTANS
315 PRINTLEFT$(AT$,7)SPC(6)"
               "
320 PRINTLEFT$(AT$,7)SPC(6)ANS;
330 SM=SM+1
340 IFANS=CATHENGOTO380
350 POKESO+4,17:FORT=1TO40:NEXTT:POKESO+
4,16
360 PRINTCHR$(37);"    ";
364 PRINTCA
370 GOTO410
380 POKESO+1,30:POKESO+4,17:FORT=1TO100:
NEXTT:POKESO+4,16:POKESO+1,20
390 PRINTCHR$(36)
400 SC=SC+1
410 PRINT:PRINT
420 IFSM=20THENGOTO460
430 PRINTLEFT$(AT$,1)SPC(5)"SUMS: ";SM
440 PRINTLEFT$(AT$,1)SPC(17)"SCORE: ";SC
446 PRINTLEFT$(AT$,2)SPC(0)"
               "
448 PRINTLEFT$(AT$,3)SPC(0)"
               "
450 GOTO190
460 FORDL=1TO250:NEXTDL
470 PRINTCHR$(146)
480 PRINTLEFT$(AT$,8)SPC(6)"YOU HAD "SC"
 CORRECT ANSWERS"
490 PRINTLEFT$(AT$,10)SPC(8)"OUT OF 20 Q
UESTIONS."
500 END
```

```
7000 REM *** READ IN GRAPHIC DATA ***
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
34)OR1
7060 FORI=0TO23:READA:POKE12568+I,A:NEXT
I
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

4
Addition and Subtraction

```
SUMS:  10        SCORE:  6



        43619  -
        11506
        ───────
        32113

        CORRECT!
```

When you cover other sums programs in this book you will find that we recommend that you don't use pencils, paper or calculators because you probably won't have them the next time you are sent out to shop for your parents. It helps to be able to do your own sums in your head because it might save you having to go back to the shops because you didn't have enough money the first time you went.

How to play

We have made this game look just like it would on your school papers. You even fill in the totals by putting the numbers in from right to left just like you do in your maths books.

If you get a correct answer a little blue munchman will run across the screen and eat away the whole sum.

If you are wrong however the munchman will only eat away the incorrect answer and you will have to try again.

Give your munchman a full stomach by getting as many correct as you can because the score board will show how many tries and how many mistakes you made.

Program

```
10 REM ************************
20 REM * ADDITION            *
22 REM *          AND         *
24 REM *             SUBTRACTION *
25 REM ************************
27 POKE52,48:POKE56,48:CLR:GOSUB7000:GOS
UB10000
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,4:POKE53281,15
40 SC=0
50 SM=0
60 POKESO+4,17:POKESO+1,30:FORDL=1TO100:
NEXTDL:POKESO+1,0:POKESO+4,16
64 PRINTCHR$(147)
160 A=INT(RND(1)*40000)+10000
170 B=INT(RND(1)*40000)+10000
190 SN=1
200 IFRND(1)>.48THENSN=-1
204 IFSN<0 AND(A-B)<10000 THEN GOTO 160
210 PRINTLEFT$(AT$,9)SPC(16);A
220 PRINTLEFT$(AT$,10)SPC(16);B
230 PRINTLEFT$(AT$,11)SPC(17);"-----"
240 PRINTLEFT$(AT$,13)SPC(17);"-----"
250 IFSN<0THENPRINTLEFT$(AT$,9)SPC(23);"
-"
260 IFSN>0THENPRINTLEFT$(AT$,9)SPC(23);"
+"
270 CA=A+B*SN
280 SM=SM+1
290 A$=""
300 PRINTLEFT$(AT$,1)SPC(5);"SUMS: ";SM;
CHR$(157);"  "
304 PRINTLEFT$(AT$,1)SPC(25);"SCORE: ";S
C;CHR$(157);"   "
310 GETK$
```

```
320 IFK$=""THENGOTO310
330 IFK$>"9" OR K$<"0" THEN GOTO310
340 :
344 FORD=1TO20:NEXTD
350 A$=K$+A$
354 PRINTLEFT$(AT$,12)SPC(22-LEN(A$));A$
360 IFLEN(A$)<>5 THEN GOTO 310
370 IFVAL(A$)=CA THEN GOTO 480
380 :
390 PRINTLEFT$(AT$,17)SPC(14);"TRY AGAIN
!"
400 FORJ=12TO25
410 PRINTLEFT$(AT$,12)SPC(J);CHR$(36)
420 POKESO+1,J:POKESO+4,129:FORDL=1TO100
:NEXTDL:POKESO+4,128
440 PRINTLEFT$(AT$,12)SPC(J);" "
450 NEXTJ
460 PRINTLEFT$(AT$,17)SPC(14);"
     "
470 GOTO280
480 :
490 PRINTLEFT$(AT$,17)SPC(15);"CORRECT!"
500 SC=SC+1
510 POKESO+4,33:FORJ=9TO13
520 FORK=12TO25
530 PRINTLEFT$(AT$,J)SPC(K);CHR$(35)
540 POKESO+1,K*J/2:POKESO+4,33:FORDL=1TO
50:POKESO+4,32
550 PRINTLEFT$(AT$,J)SPC(K)" "
560 NEXTK
570 NEXTJ
580 PRINTLEFT$(AT$,17)SPC(15);"
   "
585 POKESO+4,16:POKESO+1,0
590 GOTO160
7000 REM *** READ IN GRAPHIC DATA ***
7005 PRINTCHR$(147)"         PLEASE WAIT
A FEW MOMENTS!"
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
34)OR1
7060 FORI=0TO15:READA:POKE12568+I,A:NEXT
I
```

```
7070 DATA 60,126,219,255,189,195,126,60
7080 DATA 60,126,219,255,195,189,126,60
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
10000 REM SET UP SOUNDS
10010 S0=54272
10020 FORT=0TO28:POKES0+T,0:NEXT
10040 POKES0+5,9 :REM  ATTACK/DECAY
10050 POKES0+6,24:REM  SUSTAIN/RELEASE
10060 POKES0+24,15:REM VOLUME
10070 POKES0+4,129:REM WAVEFORM
10080 RETURN
```

5

Sum Difference


```
        SCORE: 0        HI SCORE: 0




I AM THINKING OF TWO NUMBERS
BETWEEN 1 AND 20
THE SUM OF THE NUMBERS IS 27
THE DIFFERENCE IS 3
```

We thought about calling this game 'some difference' as it isn't nearly as easy as it looks at first.

You are being told by your computer that it is thinking of two numbers between 1 and 20. It will tell you the total sum and the **difference** between the two numbers. All you have to do is correctly guess the answer.

Example: The sum of the numbers is 13
         The difference is 9
         What are the numbers?
         Answer 2 and 11

Simple isn't it?

```
7070 DATA 60,126,219,255,189,195,126,60
7080 DATA 60,126,219,255,195,189,126,60
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
10000 REM SET UP SOUNDS
10010 S0=54272
10020 FORT=0TO28:POKES0+T,0:NEXT
10040 POKES0+5,9 :REM  ATTACK/DECAY
10050 POKES0+6,24:REM  SUSTAIN/RELEASE
10060 POKES0+24,15:REM VOLUME
10070 POKES0+4,129:REM WAVEFORM
10080 RETURN
```

5

Sum Difference

```
SCORE: 0        HI SCORE: 0



I AM THINKING OF TWO NUMBERS
BETWEEN 1 AND 20
THE SUM OF THE NUMBERS IS 27
THE DIFFERENCE IS 3
```

We thought about calling this game 'some difference' as it isn't
nearly as easy as it looks at first.

You are being told by your computer that it is thinking of two
numbers between 1 and 20. It will tell you the total sum and the
difference between the two numbers. All you have to do is
correctly guess the answer.

Example: The sum of the numbers is 13
The difference is 9
What are the numbers?
Answer 2 and 11

Simple isn't it?

How to play

Your computer will tell you the sum of the numbers it is thinking of and the difference and ask for your answers.

After each number press RETURN.

If you are correct the score increases on the top of the board.

As you become better at this game the computer will move the range of numbers from 1 - 20 to 1 - 25 and so on.

A wrong answer will end the game completely and you will be asked if you wish to compete again. High scores will be recorded on the screen to allow you to compete for the high score title.

Programming Hints

You can make the game tougher from the very beginning by increasing the value in line 50 so that the range is wider immediately.

Program

```
10 REM *********************
20 REM *  SUM DIFFERENCE   *
22 REM *                   *
24 REM *                   *
25 REM *********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
33 POKE53280,6:POKE53281,9
35 GOSUB10000
40 HS=0
50 MAX=20
60 SC=0
70 PRINTCHR$(147)
80 PRINTLEFT$(AT$,2)SPC(4)CHR$(144);"SCO
RE: ";CHR$(5);SC
90 PRINTLEFT$(AT$,2)SPC(19)CHR$(144);"HI
 SCORE: ";CHR$(5);HS;CHR$(30)
100 R1=INT(RND(1)*MAX)+1
```

```
110 R2=INT(RND(1)*MAX)+1
120 IFR2>=R1THENGOTO100
125 POKESO+1,25:POKESO+4,17:FORT=1TO30:N
EXTT:POKESO+4,16
130 PRINTLEFT$(AT$,4)SPC(2)"I AM THINKIN
G OF TWO NUMBERS BETWEEN      1 AND";MAX
133 FORDL=1TO500:NEXTDL
135 POKESO+1,22:POKESO+4,17:FORT=1TO30:N
EXTT:POKESO+4,16:PRINTCHR$(159)
140 PRINTLEFT$(AT$,7)SPC(2);"THE SUM OF
THE NUMBERS IS ";CHR$(5);R1+R2
143 FORDL=1TO500:NEXTDL
145 POKESO+1,20:POKESO+4,17:FORT=1TO30:N
EXTT:POKESO+4,16:PRINTCHR$(158)
150 PRINTLEFT$(AT$,9)SPC(2)"THE DIFFEREN
CE IS ";CHR$(5);R1-R2
153 FORDL=1TO500:NEXTDL
155 POKESO+1,25:POKESO+4,17:FORT=1TO30:N
EXTT:POKESO+4,16:PRINTCHR$(152)
160 PRINTLEFT$(AT$,11)SPC(2);:INPUT"WHAT
 IS THE FIRST NUMBER";N1
162 POKESO+1,10:POKESO+4,17:FORT=1TO30:N
EXTT:POKESO+4,16:PRINTCHR$(152)
165 PRINTLEFT$(AT$,13)SPC(2);:INPUT"WHAT
 IS THE SECOND NUMBER";N2
167 POKESO+1,10:POKESO+4,17:FORT=1TO30:N
EXTT:POKESO+4,16
170 IFN1=N2THENGOTO190
180 IF((N1=R1)OR(N1=R2))AND((N2=R1)OR(N2
=R2))THENGOTO280
190 FORDL=1TO50:NEXTDL:POKESO+4,33
192 FORDL=50TO2STEP-2:FORT=1TO20:POKESO+
1,T+DL:NEXTT
194 NEXTDL:POKESO+4,16
196 FORDL=1TO500:NEXTDL:PRINTCHR$(144)
200 PRINTLEFT$(AT$,16)SPC(2)CHR$(144);"T
HE TWO NUMBERS WERE ";
202 PRINTCHR$(5);R1;CHR$(144);" AND";CHR
$(5);R2:PRINTCHR$(5)
210 PRINT"          "R1;CHR$(144);"+";CHR
$(5);R2;CHR$(144);"=";CHR$(158);R1+R2
215 PRINTCHR$(5)
220 PRINT"          "R1;CHR$(144);"-";CHR
$(5);R2;CHR$(144);"=";CHR$(158);R1-R2
224 PRINT
230 PRINT"          YOUR SCORE IS ";SC
```

```
240 IFSC>HSTHENHS=SC:PRINT"          A NEW
    HIGH SCORE!"
250 PRINTLEFT$(AT$,24)SPC(11)CHR$(154);:
    INPUT"PLAY AGAIN  ";Q$
260 IFLEFT$(Q$,1)="N"THENEND
264 GOTO50
280 PRINTLEFT$(AT$,15)SPC(8);CHR$(156);"
    THAT IS CORRECT!"
282 POKESO+4,17
285 FORDL=20TO60STEP2:FORT=1TO30STEP3:PO
    KESO+1,T+DL:POKE53280,DL:NEXTT
290 NEXTDL:POKESO+4,16
295 FORDL=1TO500:NEXTDL
300 SC=SC+1
310 MAX=MAX+5
320 GOTO70
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

6

Bar Chart
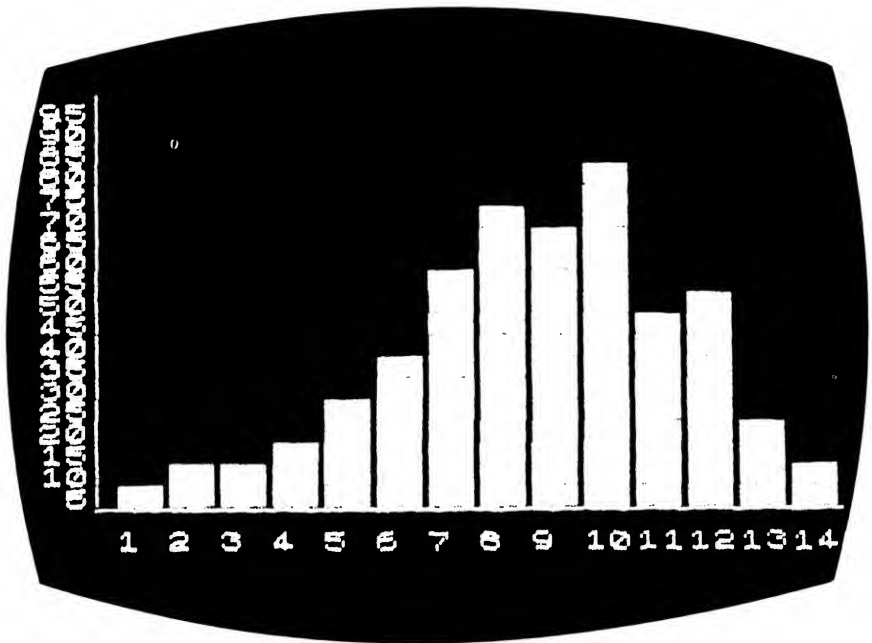
If you are planning to keep a record of how tall you have grown, or the height of a plant, or the rainfall in your garden, or the temperature changes, or how much pocket money you have been spending on sweets, toys or even computer games then this is for you.

The computer will draw you charts in six different colours so that you can lay one colour over another to show how much, or how little, change there has been since the last time you checked.

How to play

Your computer will show you an upright (perpendicular) line and a base (horizontal) line and will ask you first to decide the values you wish to use. This means that you have to decide if you want the chart to rise two, five or even ten units at a time.

You will be asked for the maximum value of the chart. You have 15 items so you may choose whether to work on days, months or any period of your choice. For example, if the temperature on the first day had been 24 Centigrade then you type in 24, and for the next day, 22, and so on. At the end of two weeks you will have finished 14 numbers and will see the high and low temperatures for the period covered.

Program

```
10 REM ************************
20 REM *                      *
22 REM *     BAR CHART        *
24 REM *                      *
25 REM ************************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53281,2:POKE53280,2
40 PRINTCHR$(147)
50 :
90 PRINT"WHAT IS YOUR MAXIMUM VALUE
            (MULTIPLES OF 20)":INPUTM
94 IFM<20 THEN PRINTLEFT$(AT$,10)SPC(11)
"TOO SMALL!":GOTO90
100 IFM>100THEN PRINTLEFT$(AT$,10)SPC(11
)"TOO BIG!  ":GOTO90
102 INPUT"COLOUR( 1 TO 16 )";C
104 IFC<1 OR C>15 THEN GOTO102
108 PRINTCHR$(147)
110 S=INT(M/20)
116 P=1
120 FORJ=1TO19
124 IFS*J>9 THENP=0
130 PRINTLEFT$(AT$,24-J)SPC(P);S*JCHR$(1
57);CHR$(165)
134 IFJ=9THENP=20
140 NEXTJ
146 N=2
150 FORJ=1TO18
154 N=N+2:J$=STR$(J)
155 PRINTLEFT$(AT$,23)SPC(N-1);CHR$(175)
;CHR$(175)
156 IFN<5THENPRINTLEFT$(AT$,23)SPC(N-1);
CHR$(108);CHR$(175)
```

```
160 PRINTLEFT$(AT$,24)SPC(N);MID$(J$,2,1
);
165 PRINTLEFT$(AT$,25)SPC(N);MID$(J$,3,1
);
170 NEXTJ
180 PL$=CHR$(18)+CHR$(32)+CHR$(167)+CHR$
(146):PL=1
186 N=3
190 PRINTLEFT$(AT$,2)SPC(10)CHR$(144);"
                                        "
195 PRINTLEFT$(AT$,2)SPC(10);:INPUT"VALU
E(OR END) ";V$
200 IFVAL(V$)=0THENGOTO300
210 VL=VAL(V$)
220 IFVL>M THENVL=M
225 POKE646,C-1
230 FORJ=0TOVL/S
240 IFJ=0THENGOTO260
250 PRINTLEFT$(AT$,24-J)SPC(N);PL$;
260 NEXTJ
270 N=N+2
280 IFN>38THENGOTO300
290 GOTO190
300 PRINTLEFT$(AT$,2)SPC(10)CHR$(144);"
                                        "
305 PRINTLEFT$(AT$,2)SPC(10);:INPUT"MORE
( Y/N )";Q$
310 IFQ$<>"Y"THENEND
320 PRINTLEFT$(AT$,2)SPC(10);CHR$(144)"
                                       "
325 PRINTLEFT$(AT$,2)SPC(10);:INPUT"COLO
UR (1 TO 16)";C
330 IFC<1 ORC>16 THEN GOTO 320
331 IFPL=3THENPL$=CHR$(18)+CHR$(32)+CHR$
(167)+CHR$(146):PL=1
332 IFPL=2THENPL$=CHR$(18)+CHR$(157)+CHR
$(167)+CHR$(146):PL=3
335 IFPL=1THENPL$=CHR$(18)+CHR$(167)+CHR
$(146):PL=2
340 GOTO186
```

7

Masterbrain
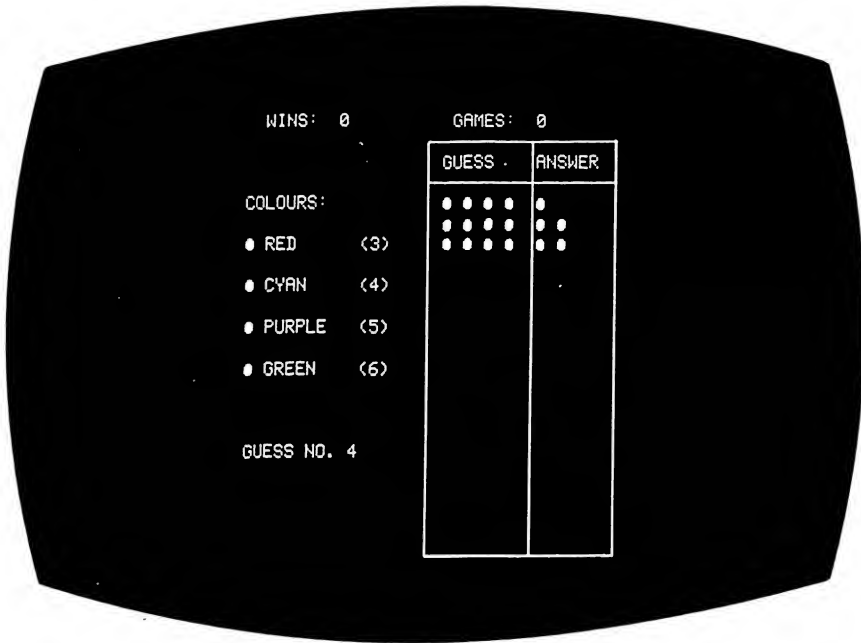
This is one of the most difficult programs in the book in our opinion as you have to really think about every move you make.

Your computer will choose four coloured pegs and place them in four positions in its memory.

You have to guess what the colours are, how many of each colour and in fact what order the computer has placed them.

You could be sitting here for days so you had better get a biscuit and a drink before you start.

How to play

At the beginning you will be asked your age as the game has

different levels of difficulty. You could cheat to begin with and say you are only five years old - it might make things easier.

The colours are as follows

> Red
> Cyan
> Purple
> Green

You are asked for your first guess and you enter your choice and press RETURN.

When you have entered your guesses the computer will show you a Black if you are in the right place and with the right coloured peg. If you are right with you colour guess but in the wrong column you will get a Cyan (blue) peg. If you are wrong with colour and column nothing will appear on the screen.

Now you may know that your first guess of colours is half right you have to go on to find out which column the colours are really in.

You could start by making all the keys 3 (red) and if the computer showed you a blank screen then you would know that it hadn't used red and you could ignore that number in your next choice. You can go on trying this method but it takes a long time and it will mean that your score is pretty awful when it shows the number of moves you took, at the end of the game.

If at any stage you want to give up, type 'Q' as your guess.

Program

```
10 REM *********************
20 REM * MASTERBRAIN       *
22 REM *                   *
24 REM *                   *
25 REM *********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,1:POKE53281,1
40 GM=0:GOSUB10000
```

```
45 DEL$=CHR$(157)+CHR$(157)+CHR$(32)+CHR
$(32)+CHR$(157)+CHR$(157)
50 WN=0
60 TR=TR+1
70 DIMS(4)
80 DIML(4)
85 PRINTCHR$(146)
90 INPUT"HOW OLD ARE YOU";AGE:PRINTCHR$(
146)
92 IFAGE<1ORAGE>18THENMAX=10:GOTO100
96 MAX=28-AGE
100 PRINTLEFT$(AT$,6)SPC(3)"COLOURS:"
110 PRINTLEFT$(AT$,8)SPC(3)CHR$(28);CHR$
(113);CHR$(32);
115 PRINT"RED       (3)"
120 PRINTLEFT$(AT$,10)SPC(3)CHR$(159);CH
R$(113);CHR$(32);
125 PRINT"CYAN      (4)"
130 PRINTLEFT$(AT$,12)SPC(3)CHR$(156);CH
R$(113);CHR$(32);
135 PRINT"PURPLE    (5)"
140 PRINTLEFT$(AT$,14)SPC(3)CHR$(30);CHR
$(113);CH(32);
145 PRINT"GREEN     (6)"
150 PRINTLEFT$(AT$,3)SPC(20)" ┌──────────┬
──────────┐
155 PRINTLEFT$(AT$,4)SPC(20)"│ GUESS    │
ANSWER │"
157 PRINTLEFT$(AT$,5)SPC(20)" ├──────────┼
──────────┤
160 FORT=1TO18
170 PRINTLEFT$(AT$,5+T)SPC(20)"│
 │          │"
180 NEXTT
190 PRINTLEFT$(AT$,23)SPC(20)" └──────────
┴──────────┘"
200 PRINTLEFT$(AT$,2)SPC(5)"WINS: ";WN
210 PRINTLEFT$(AT$,2)SPC(23)"GAMES:  "GM
220 PRINTLEFT$(AT$,18)SPC(0);
240 TR=1
260 FORJ=1TO4
270 R(J)=INT(RND(1)*4)+3
280 NEXTJ
290 POKESO+4,33:FORT=1TO40:NEXT:POKESO+4
,32
300 PRINTLEFT$(AT$,18)SPC(3)CHR$(144);"G
```

```
UESS NO."TR"C K(157);"  ":A$=""
301 PRINTLEFT$(AT$,20)SPC(3)"
    "
302 PRINTLEFT$(AT$,20)SPC(3);
304 AA$="":GETAA$
305 IFAA$=CHR$(20)ANDLEN(A$)<1THEN304
306 IFAA$<>"Q"ANDAA$<>CHR$(13)ANDAA$<>CH
R$(20)AND(AA$<"3"ORAA$>"6")THEN304
307 IFAA$="Q" THENGOTO652
308 IFAA$=CHR$(13)THEN314
309 IFAA$=CHR$(20)THENPRINTDEL$;:A$=LEFT
$(A$,LEN(A$)-1):GOTO304
310 A$=A$+AA$:POKE646,VAL(AA$)-1:PRINTCH
R$(113);CHR$(32);:GOTO304
314 IFLEN(A$)<>4THENA$="":GOTO301
316 IFA$="Q" THENGOTO652
317 PRINTLEFT$(AT$,5+TR)SPC(22);
320 FORN=1TO4
330 IFMID$(A$,N,1)>"6" ORMID$(A$,N,1)<"3
"THENGOTO310
340 L(N)=VAL(MID$(A$,N,1))
345 POKE646,L(N)-1
350 PRINTCHR$(113);CHR$(32);
360 NEXTN
370 PRINTLEFT$(AT$,5+TR)SPC(31);
380 FORN=1TO4
390 S(N)=R(N)
400 NEXTN
420 RD=0:BL=0
430 FORJ=1TO4
440 IFL(J)=S(J) THEN BL=BL+1:S(J)=-1:L(J
)=0
450 NEXTJ
456 FORJ=1TO4
458 IFL(J)=0THENGOTO490
460 FORK=1TO4
470 IFL(J)=S(K) THENRD=RD+1:S(K)=-1:L(J)
=0
480 NEXTK
490 NEXTJ
500 IFBL=0THENGOTO540
510 FORJ=1TOBL
520 PRINTCHR$(144);CHR$(113);CHR$(29);
530 NEXTJ
540 IFRD=0THENGOTO580
550 FORJ=1TORD
```

```
560 PRINTCHR$(158);CHR$(113);CHR$(29);
570 NEXTJ
580 PRINT:PRINT
590 IFBL=4THENGOTO670
600 TR=TR+1
610 IFTR<>MAX THENGOTO290
650 PRINTLEFT$(AT$,22)SPC(5);
651 PRINT"OUT OF GUESSES!"
652 PRINT:PRINT "THE COLOURS WERE: ":PRI
NT
654 FORN=1TO4
656 POKE646,L(N):PRINTCHR$(113);CHR$(32)
;
658 NEXTN
660 PRINT:PRINT
664 GOTO700
690 WN=WN+1
692 MAX=MAX-1
694 IFMAX<5THENMAX=5
700 GM=GM+1
705 PRINTLEFT$(AT$,24)SPC(15);CHR$(144);
710 INPUT"PLAY AGAIN ";Q$
720 PRINTCHR$(146)
730 IFLEFT$(Q$,1)="N"THENGOTO750
740 GOTO100
750 PRINTLEFT$(AT$,8)SPC(6)"THANKS FOR T
HE GAME!"
760 END
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM   PITCH
10040 POKESO+5,9 :REM   ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,16 :REM  WAVEFORM
10080 RETURN
```

8

English/French


```
SCORE: 7        QUESTIONS: 9



WHAT IS THE FRENCH WORD
FOR TRAIN        ?

        CORRECT!
```

Imagine you have gone on holiday with your family to France and your Mum and Dad can't remember the French for an hotel. You just walk up behind them and say 'It's an auberge, Dad'.

They will probably be so surprised that you could knock them down with a pain (that's French for a loaf of bread, but of course you will know that.)

How to play

The computer will concentrate on nouns but you can change the program later to widen your knowledge.

Always remember when answering in French to use le or la before your word. Your computer will not stop your entry but you should get into the habit of using the prefixes.

The game ends when you have twenty correct answers.

Remember to use the RETURN key after your choice of word. You may be asked questions alternately from French to English then English to French.

Programming Hints

Some of the data we have used is very simple so you can change lines 600 to 790 to insert your own, or have someone else program, harder examples.

Program

```
10 REM ********************+***
20 REM * ENGLISH           *
22 REM *          AND       *
24 REM *             FRENCH *
25 REM ********************+***
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,6:POKE53280,14:GOSUB10000
40 SC=0
50 QN=0
70 DIME$(20)
80 DIMF$(20)
100 FORJ=1TO20
110 READE$(J)
120 READF$(J)
130 NEXTJ
135 PRINTCHR$(147)
140 INPUT"    WHAT IS YOUR NAME  ";N$
142 N$=LEFT$(N$,8)
150 FORDL=1TO1000:NEXTDL
154 PRINTCHR$(147);CHR$(144)
160 PRINTLEFT$(AT$,2)SPC(5);"SCORE: ";SC
170 PRINTLEFT$(AT$,2)SPC(23);"QUESTIONS:
 ";QN
180 R=INT(RND(1)*20)+1
190 IFRND(1)>.5THEN GOTO 330
200 PRINTLEFT$(AT$,7)SPC(8);"WHAT IS THE
 FRENCH WORD";
202 PRINTLEFT$(AT$,8)SPC(8);"FOR ";E$(R)
;"?          "
```

```
205 PRINTLEFT$(AT$,10)SPC(13);
210 INPUTA$
220 QN=QN+1
230 IFLEN(A$)<15THENA$=A$+" ":GOTO 230
240 IFLEFT$(A$,LEN(F$(R)))=F$(R) THEN GO
TO 280
250 FORT=80TO0STEP-1:FORTT=1TO3:POKESO+1
,TT*T:NEXTTT,T
260 PRINTLEFT$(AT$,13)SPC(10);"NO ";N$;"
 THE WORD IS"
262 PRINTLEFT$(AT$,15)SPC(14);CHR$(28);F
$(R)
270 GOTO150
280 FORT=10TO100:FORTT=1TO2:POKESO+1,T*T
T:NEXTTT,T:POKESO+1,0
290 PRINTLEFT$(AT$,13)SPC(15);"CORRECT!"
300 SC=SC+1
310 IFSC=20 THEN GOTO410
320 GOTO150
330 PRINTLEFT$(AT$,7)SPC(8);"WHAT IS THE
 ENGLISH WORD"
332 PRINTLEFT$(AT$,8)SPC(8);"FOR ";F$(R)
;"?          "
335 PRINTLEFT$(AT$,10)SPC(13);
340 INPUTA$
350 QN=QN+1
360 IFLEN(A$)<10 THEN A$=A$+" ":GOTO360
370 IFLEFT$(A$,LEN(E$(R)))=E$(R) THEN GO
TO 280
380 FORT=200TO0STEP-1:POKESO+1,T:NEXTT
390 PRINTLEFT$(AT$,13)SPC(10);"NO ";N$;"
 THE WORD IS "
392 PRINTLEFT$(AT$,15)SPC(15);CHR$(28);E
$(R)
400 GOTO150
410 POKE53281,0
420 POKE53280,0
430 PRINTCHR$(147);CHR$(158)
440 PRINTLEFT$(AT$,8)SPC(6);"CONGRATULAT
IONS! YOU HAVE"
450 PRINTLEFT$(AT$,12)SPC(6);" ANSWERED
20  QUESTIONS"
460 PRINTLEFT$(AT$,16)SPC(6);"       CORR
ECTLY. "
470 :
480 :
```

```
490 :
500 FORDL=1TO1000:NEXTDL
510 POKE53281,7
520 POKE53280,7
530 PRINTCHR$(147)
540 PRINTCHR$(144):END
600 DATA"TABLE","LA TABLE"
610 DATA"CHAIR","LA CHAISE"
620 DATA"DOOR","LA PORTE"
630 DATA"HOUSE","LA MAISON"
640 DATA"DOG","LE CHIEN"
650 DATA"CAT","LE CHAT"
660 DATA"GARDEN","LE JARDIN"
670 DATA"COAT","LE MANTEAU"
680 DATA"HAT","LE CHAPEAU"
690 DATA"BICYCLE","LA BICYCLETTE"
700 DATA"TRAIN","LE TRAIN"
710 DATA"STATION","LA GARE"
720 DATA"BREAD","LE PAIN"
730 DATA"MILK","LE LAIT"
740 DATA"CUP","LA TASSE"
750 DATA"APPLE","LA POMME"
760 DATA"ROAD","LA RUE"
770 DATA"MAP","LA CARTE"
780 DATA"SEA","LA MER"
790 DATA"BOAT","LE BATEAU"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM   ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,17 :REM  WAVEFORM
10080 RETURN
```

9

Fizz/Buzz

```
    SCORE: 2          HIGH SCORE: 0


        YOUR NEXT ANSWER? 3

      THAT SHOULD HAVE BEEN FIZZ


        YOUR SCORE IS  2


        A NEW HIGH SCORE!


   WOULD YOU.LIKE TO PLAY AGAIN(Y/N)
```

You might have played this at school with everyone in your class making a fool of themselves but now it is up to you alone to get it right or look silly.

Every time a number can be divided by 3 you must press FIZZ and every time it can be divided by 5 you press BUZZ. Remember to press RETURN after each entry.

Example: 1, 2, FIZZ, 4, BUZZ, and so on.

How to play

You type in the numbers and the FIZZES and BUZZES.

If you make a mistake the computer will tell you what you have done wrong and will send you back to the beginning.

At the end your computer will thank you for the game.

Programming Hints

You can easily change the program for numbers other than 3 and 5
if you find you are getting too good for the computer. Why not try
5 and 7?

Program

```
10 REM ************************
12 REM *                      *
14 REM *     FIZZ BUZZ        *
16 REM *                      *
18 REM *                      *
20 REM ************************
21 GOSUB10000:GOTO500
22 POKE53280,4:POKE53281,3
25 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
30 HS=0
40 C=1:PRINTCHR$(147)
60 PRINTLEFT$(AT$,2)SPC(5);CHR$(31);"SCO
RE:";C-1
70 PRINTLEFT$(AT$,2)SPC(22);CHR$(31);"HI
GH SCORE:"HS
90 PRINTLEFT$(AT$,10)SPC(8)"
                           "
92 PRINTLEFT$(AT$,10)SPC(8);CHR$(144);"Y
OUR";:IFC>1THENPRINT" NEXT";
95 INPUT" ANSWER";A$
100 POKESO+1,20+C:POKESO+4,33:FORT=1TO30
:NEXTT:POKESO+4,32
102 IFA$=""THEN90
104 IFLEFT$(A$,1)>"Z"THENPRINTCHR$(30);"
USE CAPITAL LETTERS,PLEASE.":GOTO90
110 IFA$="FIZZ" AND C/3=INT(C/3) AND C/5
<>INT(C/5) THEN GOTO300
120 IFA$="BUZZ" AND C/5=INT(C/5) AND C/3
<>INT(C/3) THEN GOTO300
130 IFA$="FIZZ BUZZ" AND C/3=INT(C/3) AN
D C/5=INT(C/5) THEN GOTO300
140 IFLEFT$(A$,1)>"9" OR LEFT$(A$,1)<"0"
 THEN GOTO 170
```

```
150 ANS=VAL(A$)
160 IF ANS=C AND C/3<>INT(C/3) AND C/5<>
INT(C/5) THEN GOTO 300
170 :
180 PRINTCHR$(5);"      THAT SHOULD HAVE
 BEEN ";
185 FORTT=1TO40:POKESO+4,33:FORT=60-TTTO
30STEP-1:POKESO+1,T:NEXTT,TT:POKESO+4,16
190 IF C/3<>INT(C/3) AND C/5<>INT(C/5) T
HEN PRINTCHR$(144);C;
200 IF C/3=INT(C/3) THENPRINT;CHR$(30);"
FIZZ ";
210 IFC/5=INT(C/5) THEN PRINT;CHR$(31);"
BUZZ";
220 PRINT:PRINT:PRINT:FORT=1TO500:NEXTT
230 PRINT;CHR$(154);"        YOUR SCORE
 IS ";C-1
234 PRINT:PRINT
240 IF C-1>HS THENHS=C-1:PRINT"
 A NEW HIGH SCORE!":PRINT:PRINTCHR$(144)
250 INPUT"  WOULD YOU LIKE TO PLAY AGAIN
(Y/N)";Q$
260 PRINTCHR$(147)
270 IFLEFT$(Q$,1)="N"THEN GOTO700
280 GOTO40
300 REM
310 PRINTLEFT$(AT$,15)SPC(16)A$"       "
320 PRINT:PRINT
330 C=C+1
340 GOTO60
500 REM INSTRUCTIONS
505 POKE53280,12:POKE53281,6
510 PRINTCHR$(147)
520 FORT=1TO100:POKE646,T:PRINT;CHR$(18)
;"FIZZ BUZZ ";:NEXTT
530 FORTT=1TO20:POKESO+4,17:FORT=70TO40S
TEP-2:POKESO+1,T:NEXTT,TT:POKESO+4,16
535 PRINTCHR$(147);CHR$(146);CHR$(17);
540 PRINT"      F I Z Z - B U Z Z
550 PRINT"      ---------------
555 PRINTCHR$(144);CHR$(17);
560 PRINT"IN THIS GAME YOU HAVE TO COUNT
 FROM  1  UPWARDS, EACH TIME ADDING ";
570 PRINT"1 TO THE LAST  NUMBER. THE MOR
E TIMES THAT YOU CAN DO   THIS, ";
```

```
580 PRINT"THE MORE POINTS YOU WILL SCORE
."
590 PRINT;CHR$(17);" TO MAKE IT A BIT HA
RDER, YOU ALSO HAVE    TO DO THIS:- "
600 PRINTCHR$(5);CHR$(17);"   IF YOU CAN
 DIVIDE THE NUMBER BY "CHR$(144);"3";
605 PRINTCHR$(144);"                  THEN
 TYPE ";CHR$(158);"FIZZ"
610 PRINTCHR$(5);CHR$(17);"   IF YOU CAN
 DIVIDE THE NUMBER BY "CHR$(144);"5";
615 PRINTCHR$(5);"                 THEN T
YPE "CHR$(158);"BUZZ"
620 PRINTCHR$(5);CHR$(17)"   IF YOU CAN
DIVIDE THE NUMBER BY          ";
622 PRINTCHR$(144);"3 "CHR$(5);"AND"CHR$
(144)"5";
625 PRINTCHR$(5);" THEN TYPE "CHR$(158);
"FIZZ BUZZ"
650 PRINTCHR$(17);"  "CHR$(18);" PRESS
ANY KEY TO START THE GAME "CHR$(146)
660 WAIT197,64
670 GETA$:IFA$=""THEN670
675 POKESO+1,25:POKESO+4,33:FORT=1TO50:N
EXTT:POKESO+4,32
680 GOTO22
700 PRINTCHR$(147)
705 PRINTLEFT$(AT$,9)SPC(8)CHR$(28);CHR$
(18);"                 "
710 PRINTLEFT$(AT$,10)SPC(8)CHR$(18);" T
HANKS FOR THE GAME! "
715 PRINTLEFT$(AT$,11)SPC(8)CHR$(18);"
                  ":END
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM   PITCH
10040 POKESO+5,9 :REM   ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,16 :REM  WAVEFORM
10080 RETURN
```

10

Highway Code

```
   ۰    QUESTIONS:  10    SCORE:  9


On  a  road  without  a  footpath,
you  should  walk:
1.  On  either  side.

2.  On  the  left  hand  side.

3.  On  the  right-hand  side.

  ۰  PRESS  1,  2  OR  3,  JOHN
```

Sorry, we don't have a green giant to help you across the road or help you solve any of the questions in this game. This program is designed to make sure that you know your code before you begin to take your cycle out on the open road. It will also help you to keep your parents out of trouble as you can tell them where they shouldn't park their cars.

How to play

The first thing your jolly green computer will ask you is your name which you should enter and press RETURN.

You will then be given a series of questions with three answers to each. You must choose the correct one if you want to get points and, in real life, stay alive on the road.

Example: The best place to cross the road is

      1. a) at a bus stop

      2. b) between cars

      3. c) on a zebra crossing

You must press 1, 2 or 3. The quicker your response the higher the score.

The game will end after twenty questions which are at random so you may get the same one twice.

Programming Hints

To change the selection of questions you alter the input data lines from 600 - 727 if you wish to make things easier or more difficult for the player.

Program

```
10 REM ********************
20 REM *   HIGHWAY        *
22 REM *            CODE   *
24 REM *                   *
25 REM ********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 GOSUB10000
40 SC=0
50 QN=0
60 RS=0
70 DIMQ$(13)
80 DIMA$(13,3)
90 POKE53280,0:POKE53281,0:PRINTCHR$(158
)
100 INPUT"WHAT IS YOUR NAME  ";N$
110 FORJ=1TO13
120 READQ$(J)
130 FORK=1TO3
140 READA$(J,K)
```

```
150 NEXTK
160 NEXTJ
170 PRINTCHR$(147)
180 PRINTLEFT$(AT$,1)SPC(5)CHR$(159);"QU
ESTIONS: ";QN
190 PRINTLEFT$(AT$,1)SPC(27);"SCORE: ";S
C
200 R=INT(RND(1)*13)+1
210 IFR=RSTHENGOTO200
220 RS=R
230 PRINTLEFT$(AT$,6)SPC(2);CHR$(5);Q$(R
)
240 RA=INT(RND(1)*3)+1
250 RB=INT(RND(1)*3)+1
260 IFRB=RATHENGOTO250
270 RC=INT(RND(1)*3)+1
280 IFRC=RB OR RC=RA THEN GOTO270
290 PRINTLEFT$(AT$,9)SPC(3);CHR$(158);"1
. ";A$(R,RA)
300 PRINTLEFT$(AT$,12)SPC(3);CHR$(150);"
2. ";A$(R,RB)
310 PRINTLEFT$(AT$,15)SPC(3);CHR$(154);"
3. ";A$(R,RC)
320 PRINTLEFT$(AT$,19)SPC(7);"PRESS 1, 2
 OR 3, ";N$
330 QN=QN+1:POKE198,0
340 FORT=1TO500
350 GETR$
360 IFT/50=INT(T/50)THENPOKESO+1,20:FORD
L=1TO20:NEXTDL:POKESO+1,0
370 IFR$="1"THEN T$=A$(R,RA):GOTO440
380 IFR$="2"THEN T$=A$(R,RB):GOTO440
390 IFR$="3"THEN T$=A$(R,RC):GOTO440
400 NEXTT
410 POKESO+1,30:FORDL=1TO300:NEXTDL:POKE
SO+1,0
420 PRINTLEFT$(AT$,21)SPC(10);CHR$(18);"
OUT OF TIME!";CHR$(146)
430 GOTO520
440 IFA$(R,1)=T$THEN GOTO 480
450 FORSS=1TO15
455 PRINTLEFT$(AT$,21)SPC(8)CHR$(5);"THA
T IS WRONG! ";N$
457 POKESO+1,20-SS:FORDL=1TO50:NEXTDL
460 PRINTLEFT$(AT$,21)SPC(8)CHR$(144);"T
HAT IS WRONG! ";N$
```

```
462 FORDL=1TO20:NEXTDL
465 NEXTSS:POKESO+1,0
470 GOTO520
480 FORSS=1TO15
485 PRINTLEFT$(AT$,21)SPC(10)CHR$(5);"CO
RRECT!"
486 POKESO+1,20+SS:FORDL=1TO50:NEXTDL
487 PRINTLEFT$(AT$,21)SPC(10)CHR$(144);"
CORRECT!"
488 FORDL=1TO20:NEXTDL
490 NEXTSS:POKESO+1,0
492 SI=10-2*INT(T/100)
500 SC=SC+SI
520 FORD=1TO1000:NEXTD
522 IFQN=20THENGOTO540
530 GOTO170
540 PRINTCHR$(147)
550 PRINTLEFT$(AT$,10)SPC(4);CHR$(144);"
YOUR FINAL SCORE IS ";SC
560 POKE53280,7:POKE53281,7:PRINTCHR$(14
4)
580 POKE198,0:END
600 DATA"WHAT SHOULD YOU WEAR AT NIGHT?"
605 DATA"SOMETHING LIGHT OR REFLECTIVE."
,"DARK CLOTHES."
606 DATA"AS MANY CLOTHES AS POSSIBLE"
610 DATA"WHICH IS THE SAFEST PLACE TO CR
OSS THE   ROAD?"
615 DATA"A ZEBRA CROSSING.","A DUAL CARR
IAGEWAY.","BETWEEN PARKED CARS."
620 DATA"WHERE SHOULD YOU STAND BEFORE C
ROSSING    THE ROAD?"
625 DATA"ON THE PAVEMENT A LITTLE WAY FR
OM    THE KERB.","BEHIND A PARKED CAR."
627 DATA"IN THE ROAD."
630 DATA"WHERE MIGHT YOU SEE ZIG-ZAG LIN
ES?"
635 DATA"NEAR A ZEBRA CROSSING.","NEAR T
RAFFIC LIGHTS.","ON A BUSY ROAD."
640 DATA"ON A ROAD WITHOUT A FOOTPATH, Y
OU         SHOULD WALK:"
645 DATA"ON THE RIGHT-HAND SIDE.","ON TH
E·LEFT-HAND SIDE.","ON EITHER SIDE."
650 DATA"WHAT IS THE BEST WAY TO CROSS A
           CLEAR ROAD?"
655 DATA"WALK STRAIGHT ACROSS.","RUN.","
WALK DIAGONALLY."
```

```
660 DATA"WHEN WILL A CAR TAKE LONGEST TO
    STOP?"
665 DATA"ON A WET ROAD.","ON A DRY ROAD.
","ON A BUSY ROAD."
670 DATA"AT A PELICAN CROSSING,YOU SEE A
    RED        MAN, WHAT DO YOU DO?"
675 DATA"WAIT.","RUN QUICKLY ACROSS.","W
ALK ACROSS."
680 DATA"WHERE SHOULD YOU GET ON A BUS?"
685 DATA"AT A BUS STOP.","AT TRAFFIC LIG
HTS.","ANYWHERE IT HAS STOPPED."
690 DATA"WHAT MUST YOU HAVE ON A BICYCLE
         AT NIGHT?"
695 DATA"FRONT AND REAR LAMPS AND A
       REFLECTOR.","FRONT AND REAR LAMPS."
697 DATA"A FRONT LAMP AND A REFLECTOR"
700 DATA"WHEN YOU ARE WITH A DOG, SHOULD
 IT BE:"
705 DATA"ON A LEAD.","IN THE ROAD.","ON
ALEAD."
710 DATA"RED AND AMBER LIGHTS AT TRAFFIC
          LIGHTS MEANS:"
715 DATA"TRAFFIC ABOUT TO START.","TRAFF
IC STOPPING."
717 DATA"TRAFFIC MOVING BOTH WAYS."
720 DATA"ON A CYCLE AT TRAFFIC LIGHTS SH
OWING        RED WHAT SHOULD YOU DO ?"
725 DATA"WAIT UNTIL THEY ARE GREEN.","CY
CLE THROUGH."
727 DATA"GET OFF AND WALK THROUGH."
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,0:REM   PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

11

Guess the Number

```
        G U E S S   A   N U M B E R

I AM GOING TO THINK OF A NUMBER BETWEEN
1 AND 100. YOU TRY AND GUESS WHAT IT IS.

O.K.  WHAT NUMBER         GUESS  ANSWER
  AM I THINKING OF?          13  LOW
                             75  HIGH
                             26  LOW
       ?34...                14  LOW
                             50  HIGH

YOUR ANSWER IS TOO HIGH.
   TRY A LOWER NUMBER..
```

You have the chance here to see if you can guess the number your computer has chosen for you.

The game will begin with a number between 1 and 100 but as you become an expert at guessing the number your computer will start to widen the range to between 1 and 120, and then 140 and so on.

Programming Hints

You can make the game easier or more difficult to start with if you decrease or increase the value of 'max' in line 50.

Program

```
10 REM *****************************
12 REM *                           *
14 REM *    GUESS THE NUMBER       *
18 REM *                           *
20 REM *****************************
25 POKE53280,12:POKE53281,11:GOSUB10000
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
40 TR=0:OPEN3,0
50 MAX=100
60 C=0
70 PRINTCHR$(147):TR=0
80 PRINTCHR$(154)"        G U E S S  A  N
  U M B E R
82 PRINT"      -------------------------
-"
84 FORDL=1TO1000:NEXTDL:GOSUB10200
90 PRINTLEFT$(AT$,4)SPC(0)CHR$(30);"I AM
 GOING TO THINK OF A NUMBER ";
92 PRINT"BETWEEN 1 AND"MAXCHR$(157);".";
94 PRINT" YOU TRY AND GUESS WHAT IT IS."
95 FORDL=1TO3000:NEXTDL
100 PRINTLEFT$(AT$,21)SPC(14)"THINKING..
."
110 R=INT(RND(1)*MAX)+1
120 FORDL=1TO2000:NEXTDL
124 PRINTLEFT$(AT$,21)SPC(14)"
  "
125 PRINTLEFT$(AT$,7)SPC(25)"GUESS   ANSW
ER"
127 PRINTCHR$(158)
130 PRINTLEFT$(AT$,7)SPC(0)"O.K.   WHAT N
UMBER":PRINT" AM I THINKING OF?"
135 PRINTLEFT$(AT$,10)SPC(0)"
       "
140 PRINTLEFT$(AT$,10)SPC(4)"?.....";
142 PRINTLEFT$(AT$,10)SPC(5);
145 WAIT197,64:POKE198,0
150 INPUT#3,ANS$:ANS=VAL(LEFT$(ANS$,8)):
ANS$=STR$(ANS):PRINT:PRINT:PRINT
155 IFVAL(ANS$)=0THEN130
160 TR=TR+1
170 IFANS>RTHENPRINTCHR$(159);"YOUR ANSW
ER IS TOO";CHR$(5);" HIGH.";CHR$(159)
```

```
175 IFANS>RTHENPRINT"  TRY A LOWER NUMBE
R.":GOSUB10200
180 IFANS<RTHENPRINTCHR$(159);" YOUR ANS
WER IS TOO ";CHR$(150)"LOW. ";CHR$(159)
181 IFANS<RTHENPRINT"  TRY A HIGHER NUMB
ER.":GOSUB10210
182 IFANS>RTHENR$=CHR$(5)+"HIGH"
183 IFANS<RTHENR$=CHR$(150)+"LOW "
184 IFANS=RTHENR$=CHR$(153)+"CORRECT"
185 PRINTLEFT$(AT$,7+TR)SPC(30-LEN(ANS$)
)ANS"  "R$;
186 IFTR=>18THEN400
189 IFANS<>R THEN GOTO130
200 GOSUB10220
210 PRINTLEFT$(AT$,13)"   THAT IS THE N
UMBER!!   "
212 PRINTLEFT$(AT$,14)"
                  "
214 PRINT:PRINT
216 FORDL=1TO1000:NEXTDL
218 TP=MAX
220 C=C+1
230 TP=TP/2
240 IF TP>1 THENGOTO 220
250 PRINT" YOU GUESSED IN "TR"TRIES."
252 PRINT:PRINT
260 IFTR<C+2THENGOTO310
270 MAX=MAX-20
280 IF MAX<20 THENMAX=20:GOTO330
290 PRINT"THAT WAS A BIT SLOW! I WILL RE
DUCE THE     MAXIMUM NUMBER TO ";MAX
300 GOTO330
310 MAX=MAX+20
320 PRINT"THAT IS VERY GOOD. I WILL INCR
EASE THE     MAXIMUM NUMBER TO ";MAX
330 C=0
340 TR=0
350 FORDL=1TO3000:NEXTDL
352 PRINTLEFT$(AT$,23)SPC(5)CHR$(18);" H
IT ANY KEY TO PLAY AGAIN ";
355 GETA$:IFA$=""THEN355
360 PRINTCHR$(147)
370 GOTO70
400 REM RUN OUT OF GUESSES
410 PRINTLEFT$(AT$,12)SPC(2)CHR$(159);"Y
OU'VE RUN OUT OF GUESSES"
```

```
415 PRINTLEFT$(AT$,13)SPC(0)"
                "
420 PRINTLEFT$(AT$,14)SPC(2)CHR$(158);"T
HE NUMBER WAS ";CHR$(5);R;CHR$(157);" "
430 GOTO350
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM    PITCH V1
10040 POKESO+8,10:REM    PITCH V2
10050 POKESO+15,12:REM    PITCH V3
10060 POKESO+5,9 :POKESO+6,240:REM   ADSR
 V1
10070 POKESO+12,12:POKESO+13,100:REM ADS
R V2
10080 POKESO+19,34:POKESO+20,60:REM ADSR
 V3
10090 POKESO+24,15:REM    VOLUME
10100 POKESO+4,16 :REM   WAVEFORM V1
10110 POKESO+11,32 :REM   WAVEFORM V2
10120 POKESO+18,16 :REM   WAVEFORM V3
10125 RETURN
10130 :POKESO+4,33:POKESO+11,17:FORSS=5T
O100STEP6:POKESO+1,SS:POKESO+8,200-SS
10140 NEXTSS
10150 POKESO+4,17:FORSS=200TO10STEP-8:PO
KESO+1,SS:POKESO+8,250-SS:NEXTSS
10160 :POKESO+4,33:FORSS=30TO100STEP10:P
OKESO+1,SS:NEXTSS
10170 POKESO+4,33:FORSS=50TO10STEP-8:POK
ESO+1,SS:NEXTSS
10180 POKESO+4,16:POKESO+11,0:RETURN
10200 POKESO+4,17:FORSS=1TO80:POKESO+1,S
S:NEXTSS:POKESO+4,16:RETURN
10210 POKESO+4,17:FORSS=80TO1STEP-1:POKE
SO+1,SS:NEXTSS:POKESO+4,16:RETURN
10220 FORY=1TO9:POKESO+4,17:FORSS=10TO40
:POKESO+1,SS:NEXTSS,Y:POKESO+4,16:RETURN
10230 POKESO+4,17:FORSS=200TO0STEP-1:POK
ESO+1,SS:NEXTSS:POKESO+4,16:RETURN
```

12

Word Mix

```
     WORDS:  2      SCORE:  4


        BMLAOCRNINGK


    WHAT ARE THE TWO WORDS?




    THE TWO WORDS WERE
    BLACK        MORNING
```

If you ever get words mixed together when you are thinking about something else and have to go back and rewrite your essay then this game will be easy for you.

We have mixed one word through another but we haven't jumbled them up - if you see what we mean.

Here is an example: ABFOOUUTR

                        spells ABOUT FOUR

As you can see both words are mixed together but not jumbled. You have to have a sharp eye to pick them out and separate them.

How to play

The computer will put up on your screen two words mixed as in the example above.

Type in the first word and press RETURN then the second word and RETURN.

You can use lower case - capitals aren't necessary.

You will receive one point for each correct word and the score will appear on the top of your screen.

If you cannot solve the riddle type ESCAPE to give up.

Programming Hints

If you wish to make the selection of words even more difficult then change the data in lines 450 onward. If you increase the number of words make sure that you change the 50 in lines 60, 80, 140, 150 to match the total number of words, e.g. if you had 80 words, line 60 would be:

60 DIM Word$ (80)

Program

```
10 REM *****************
12 REM *               *
14 REM *     WORD MIX   *
16 REM *               *
20 REM *****************
22 POKE53280,14:POKE53281,12:GOSUB10000
25 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
40 SC=0
50 TR=0
60 DIMW$(50)
80 FORJ=1 TO 50
90 READ W$(J)
100 NEXTJ
110 PRINTCHR$(147)
120 PRINTLEFT$(AT$,3)SPC(5);CHR$(31);"WO
RDS:";CHR$(5);TR
```

```
125 PRINTLEFT$(AT$,1)SPC(12);CHR$(156);"
W O R D M I X"
130 PRINTLEFT$(AT$,3)SPC(25);CHR$(144);"
SCORE:";CHR$(5);SC
140 R1=INT(RND(1)*50)+1
150 R2=INT(RND(1)*50)+1
160 IFR1=R2THENGOTO150
162 IF LEN(W$(R1))<10 THENW$(R1)=W$(R1)+
" ":GOTO162
164 IF LEN(W$(R2))<10 THENW$(R2)=W$(R2)+
" ":GOTO164
165 POKESO+4,17:POKESO+1,30:FORT=1TO40:N
EXTT:POKESO+4,16
170 M1=1
180 M2=1
190 PRINTLEFT$(AT$,6)SPC(13);CHR$(5);
200 IFRND(1)>.5THENGOTO246
208 IFM1>10THENGOTO280
210 IFMID$(W$(R1),M1,1)=" "THENGOTO230
220 PRINTMID$(W$(R1),M1,1);
230 M1=M1+1
240 GOTO280
246 IFM2>10THENGOTO280
250 IFMID$(W$(R2),M2,1)=" "THENGOTO270
260 PRINTMID$(W$(R2),M2,1);
270 M2=M2+1
280 IFM1<10 OR M2<10 THENGOTO200
290 PRINTLEFT$(AT$,10)SPC(8)"WHAT ARE TH
E TWO WORDS?";CHR$(144);CHR$(17)
300 INPUT"        FIRST WORD ";A$
302 POKESO+4,17:POKESO+1,26:FORT=1TO40:N
EXTT:POKESO+4,16:PRINTCHR$(17);CHR$(144)
305 INPUT"        SECOND WORD ";B$
307 POKESO+4,17:POKESO+1,28:FORT=1TO40:N
EXTT:POKESO+4,16
310 TR=TR+1
314 IF A$="QUIT" THEN GOTO 420
320 IF LEN(A$)<10 THENA$=A$+" ":GOTO320
330 IF LEN(B$)<10 THENB$=B$+" ":GOTO320
340 IF A$<>W$(R1) AND A$<>W$(R2) THEN GO
TO370
345 PRINTCHR$(5);
350 PRINTLEFT$(AT$,16)SPC(6)"YOUR FIRST
WORD IS ";CHR$(159);"CORRECT"
355 POKESO+4,17:POKESO+1,30:FORT=1TO50:F
```

```
OKESO+1,T:NEXTT:POKESO+4,16
360 A$=""
370 IF B$<>W$(R1) AND B$<>W$(R2) THEN GO
TO400
375 PRINTCHR$(158);
380 PRINTLEFT$(AT$,18)SPC(6)"YOUR  SECON
D WORD IS ";CHR$(159);"CORRECT"
385 POKESO+4,17:POKESO+1,30:FORT=1TO50:P
OKESO+1,T:NEXTT:POKESO+4,16
390 B$="":PRINTCHR$(17);CHR$(17);
392 PRINT"      ";CHR$(18);CHR$(28);" PR
ESS ANY KEY TO CONTINUE "
394 FORDL=1TO2000:GETQQ$:IFQQ$<>""THENDL
=2000
395 NEXTDL
400 SC=SC-(A$="")-(B$="")
410 IFA$="" AND B$="" THENGOTO110
420 PRINTLEFT$(AT$,18)SPC(9)"THE TWO WOR
DS WERE"
430 PRINTLEFT$(AT$,20)SPC(9);CHR$(159);W
$(R1)
432 PRINTLEFT$(AT$,28)SPC(23);CHR$(158);
W$(R2)
433 PRINTCHR$(17);CHR$(17);CHR$(28);"
   "CHR$(18)" PRESS ANY KEY TO CONTINUE
434 FORDL=1TO2000:GETQQ$:IFQQ$<>""THENDL
=2000
435 NEXTDL
440 GOTO110
450 DATA"BANK","HOUR","MOST"
460 DATA "YARD","FOUR","MOST"
470 DATA"MORNING","TIME","FOUND"
480 DATA"HOOF","SAD","BLACK"
490 DATA"ANIMAL","ABOUT","SOLDIER"
500 DATA"COLONEL","RUMOUR","ENGINE"
510 DATA"LEG","CASTLE","DIGEST"
520 DATA"GUITAR","DOG","BUTTER"
530 DATA"BRICK","SPACE","DUCK"
540 DATA"AEROPLANE","BATTERY","SPARROW"
550 DATA"PRINT","STAR","SYSTEM"
560 DATA"CANARY","BASE","WHITE"
570 DATA"TABLE","CHAIR","MAGIC"
580 DATA"LAND","JUSTIFY","HABIT"
590 DATA"MECHANIC","CYLINDER","OIL"
600 DATA"SPADE","MARKET","TRACTOR"
610 DATA"ROBUST","VARIETY"
```

```
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

13

Constellations

This is a great game for learning how to make money off your pals by asking them at night if they know which star group is which in the sky.

It is also very handy to know your stars as you never know when you will need to navigate your way out of a crocodile-infested swamp - or drive to London in the dark. The star at the end of the tail of Ursa Minor, or the little bear, is called the pole star and will always be to your North.

How to play

The computer will show you the shape of some of the main star groups to be found in the skies around us and will give you the Latin and the common names for each group.

The screen will then show the stars without any names and will ask you to type in your answer in CAPS and RETURN.

If your guess is wrong the screen will light up and show you both the names. To stop the game press ESCAPE.

Happy stargazing.

Program

```
10 REM *********************
20 REM *                   *
22 REM *  CONSTELLATIONS   *
24 REM *                   *
25 REM *********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,0:POKE53281,0:PRINTCHR$(147
);CHR$(158)
40 T=0
50 FOR CN=1TO7
60 READ X,Y
70 CN(CN,T,0)=X
80 CN(CN,T,1)=Y
90 IFX=0THENGOTO110
100 T=T+1:GOTO60
110 READCN$(CN,0)
120 READCN$(CN,1)
130 T=0:NEXTCN
135 FORN=1TO7
137 FL=0:R=N:GOTO150
140 R=INT(RND(1)*7)+1
150 IFCN(R,T,0)=0THEN190
160 PRINTLEFT$(AT$,CN(R,T,1))SPC(CN(R,T,
0)+3)"."
170 T=T+1
180 GOTO150
190 IFFL=1THENGOTO250
195 PRINTLEFT$(AT$,4)SPC(12);"
          "
200 PRINTLEFT$(AT$,4)SPC(12);CN$(R,0)
205 PRINTLEFT$(AT$,20)SPC(12);"    ·
          "
210 PRINTLEFT$(AT$,20)SPC(12);CN$(R,1)
```

```
220 FORDL=1TO1000:NEXTDL
230 IFFL=0THENPRINTCHR$(147):T=0:NEXTN:F
L=1:GOTO310
250 PRINTLEFT$(AT$,20)SPC(8);"WHICH IS T
HIS ?"
260 PRINTLEFT$(AT$,22)SPC(8);:INPUTAN$
264 PRINTLEFT$(AT$,20)SPC(8);"
     "
266 PRINTLEFT$(AT$,22)SPC(8);"
       "
270 IFAN$=CN$(R,0)ORAN$=CN$(R,1)THENPRIN
TLEFT$(AT$,22)SPC(10)"THAT IS CORRECT!"
280 PRINTLEFT$(AT$,4)SPC(12);CN$(R,0)
290 PRINTLEFT$(AT$,20)SPC(12);CN$(R,1)
300 FORDL=1TO1000:NEXTDL
310 T=0:PRINTCHR$(147):GOTO140
1000 DATA 12,11,15,10,17,10,20,10,22,11,
25,9,24,7,0,0
1010 DATA"URSA MAJOR","GREAT BEAR"
1020 DATA12,11,14,11,12,9,14,9,15,7,17,6
,20,5,0,0
1030 DATA"URSA MINOR","LITTLE BEAR"
1040 DATA12,11,13,13,14,13,15,16,18,15,0
,0
1050 DATA"CASSIOPEIA"," "
1060 DATA12,11,13,10,11,12,11,15,14,7,16
,15,10,7,0,0
1070 DATA"ORION","THE HUNTER"
1080 DATA 12,11,13,12,14,12,15,11,16,10,
15,10,0,0
1090 DATA"CORONA BOREALIS","NORTHERN CRO
WN"
1100 DATA 12,11,15,12,17,13,17,14,0,0
1110 DATA"SAGITTA","THE ARROW"
1120 DATA12,11,16,10,17,5,18,7,24,13,21,
10,21,9,22,5,0,0
1130 DATA"CYGNUS","THE SWAN"
```

14

History Quiz

```
QUESTIONS:  2     SCORE:  19


WHERE DID THE GREAT FIRE OF
LONDON START?
1.  FURNACE LANE
2.  PUDDING LANE
3.  OXFORD CIRCUS


PRESS 1, 2 OR 3, DAVID
```

Here is a chance to catch up on your history lessons without looking stupid because you have got the answer wrong. If you are working with your own computer no one will know that you need more practice with your history.

This is very like the science quiz which offers multiple answers for which you must make the correct choice. You can also alter the questions in this program as explained at the end.

How to play

The computer will ask you for your name and you type it in and press RETURN.

A choice of statements will appear on the screen and you will be asked to choose the correct answer.

Example:

> The Napoleonic wars were fought between?
>
> 1.   The French and English
>
> 2.   The English and Americans
>
> 3.   The French and Italians

To answer press 1, 2 or 3

If you are correct the computer will tell you and if you are wrong the computer will print 'That is wrong'.

Programming Hints

The lines to change for your own questions are from 600 - 800. Remember, if you change the total number of questions you will have to change lines 70, 80, 110, 200.

Program

```
10 REM ***********************
20 REM * HISTORY QUIZ        *
22 REM *                     *
24 REM *                     *
25 REM ***********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
40 SC=0
50 QN=0
60 RS=0
70 DIMQ$(20)
80 DIMA$(20,3)
90 POKE53280,0:POKE53281,0:PRINTCHR$(158
);CHR$(147)
95 GOSUB10000
100 INPUT"     WHAT IS YOUR NAME";N$
105 POKESO+4,33:FORT=1TO30:NEXTT:POKESO+
4,32
110 FORJ=1TO20
```

```
120 READQ$(J)
130 FORK=1TO3
140 READA$(J,K)
150 NEXTK
160 NEXTJ
170 PRINTCHR$(147)
180 PRINTLEFT$(AT$,1)SPC(3)CHR$(159);"QU
ESTIONS: ";QN
190 PRINTLEFT$(AT$,1)SPC(18)CHR$(5);"SCO
RE: "SC
200 R=INT(RND(1)*20)+1
210 IFR=RSTHENGOTO200
220 RS=R
230 PRINTLEFT$(AT$,7)SPC(0)Q$(R)
240 RA=INT(RND(1)*3)+1
250 RB=INT(RND(1)*3)+1
260 IFRB=RATHENGOTO250
270 RC=INT(RND(1)*3)+1
280 IFRC=RA OR RC=RB THENGOTO270
290 PRINTLEFT$(AT$,10)SPC(0)CHR$(150);"1
. ";CHR$(129);A$(R,RA)
300 PRINTLEFT$(AT$,12)SPC(0)CHR$(150);"2
. ";CHR$(153);A$(R,RB)
310 PRINTLEFT$(AT$,14)SPC(0)CHR$(150);"3
. ";CHR$(152);A$(R,RC)
320 PRINTLEFT$(AT$,18)SPC(7)CHR$(5);CHR$
(18);" PRESS 1,2 OR 3,";N$;" "
330 QN=QN+1:FL=0:R$=""
340 FORT=1TO300
350 GETR$
360 IFT/50=INT(T/50)THENPOKESO+1,25:POKE
SO+4,33:FORTT=1TO30:NEXTTT:POKESO+4,32
370 IFR$="1"THENT$=A$(R,RA):FL=1
380 IFR$="2"THENT$=A$(R,RB):FL=1
390 IFR$="3"THENT$=A$(R,RC):FL=1
395 IFFL=1THENTT=T:T=1000:NEXTT:GOTO440
400 NEXTT
410 :
420 PRINTLEFT$(AT$,20)SPC(7)CHR$(5);CHR$
(18);" OUT OF TIME! "
430 GOTO520
440 IFA$(R,1)=T$THENGOTO480
450 POKESO+4,17:FORT=40TO1STEP-4
455 FORTT=TTOT+30:POKESO+1,TT:NEXTTT:NEX
TT:POKESO+4,16
460 PRINTLEFT$(AT$,20)SPC(7)CHR$(129);CH
```

```
R$(18);" THAT IS WRONG, ";N$;" "
470 GOTO520
480 POKESO+4,33:FORT=1TO100STEP10
484 FORTT=TTOT+30:POKESO+1,TT:NEXTTT:NEX
TT:POKESO+4,32
490 PRINTLEFT$(AT$,20)SPC(11)CHR$(158);C
HR$(18);" CORRECT!"
492 SI=10-INT(TT/100)
500 SC=SC+SI
510 :
520 FORD=1TO1000:NEXTD
522 IFQN=20THENGOTO540
530 GOTO170
540 PRINTCHR$(147)
550 POKE53280,7:POKE53281,7:POKE646,0
560 PRINTLEFT$(AT$,10)SPC(4)"YOUR FINAL
SCORE IS ";SC
570 :
580 END
590 :
600 DATA"WHEN DID JULIUS CAESAR FIRST CO
ME TO    BRITAIN","55 BC","1914","1066"
610 DATA"WHO RULED BEFORE QUEEN ELIZABET
H II","GEORGE VI","QUEEN VICTORIA"
615 DATA "EDWARD VII"
620 DATA "WHO INTRODUCED THE PENNY POST?
","ROWLAND HILL","JULIUS CAESAR"
625 DATA"WALTER RALEIGH"
630 DATA"WHERE DID THE GREAT FIRE OF LON
DON         START?"
635 DATA "PUDDING LANE","OXFORD CIRCUS",
"FURNACE LANE"
640 DATA "WHEN WAS THE FIRE OF LONDON","
1666","1943","1841"
650 DATA"WHY WERE THE EGYPTIAN PYRAMIDS
BUILT"
655 DATA"AS TOMBS","AS HOUSES","FOR GRAI
N STORAGE"
660 DATA"WHO WAS SENT TO AUSTRALIA IN TH
E LATE    EIGHTEENTH CENTURY?"
665 DATA"CONVICTS","PRISONERS OF WAR","S
LAVES"
670 DATA"WHICH CENTURY ARE WE IN NOW?"
675 DATA"TWENTIETH","NINETEENTH","EIGHTE
ENTH"
680 DATA"WHO WAS DISRAELI?"
```

```
685 DATA "A PRIME MINISTER","A KING","AN
 AUTHOR"
690 DATA"WHO INVENTED THE TELEPHONE?","B
ELL","COOK","BAIRD"
700 DATA"WHO WAS THE FIRST MAN IN SPACE"
705 DATA"YURI GAGARIN","NEIL ARMSTRONG",
"LEONARDO DA VINCI"
710 DATA"WHEN DID THE FIRST WORLD WAR ST
ART?"
715 DATA"1914","1939","1918"
720 DATA"WHO WAS SIR ROBERT WALPOLE?"
725 DATA"THE FIRST PRIME MINISTER","INVE
NTOR OF THE LOCOMOTIVE"
727 DATA"DISCOVERER OF AMERICA"
730 DATA"WITH WHICH ANIMALS DID HANNIBAL
 CROSS        THE ALPS?"
735 DATA"ELEPHANTS","CAMELS","LLAMAS"
740 DATA"WHO STARTED THE POLICE FORCE?"
745 DATA"PEEL","NELSON","GLADSTONE"
750 DATA"WHO DEFEATED THE SPANISH ARMADA
?"
755 DATA"FRANCIS DRAKE","WALTER RALEIGH"
,"HENRY VIII"
760 DATA"WHAT WAS CHAIN-MAIL?"
765 DATA"ARMOUR","AN EARLY POSTAL SERVIC
E","A SHIPS ANCHOR CHAIN"
770 DATA"HOW MANY WIVES DID HENRY VIII H
AVE?"
775 DATA"SIX","EIGHT","TWO"
780 DATA"WHAT ANIMAL SPREAD THE PLAGUE O
F 1665?"
785 DATA"RAT","MOUSE","HORSE"
790 DATA"WHO WAS THE FIRST PERSON TO WAL
K              ON THE MOON?"
795 DATA"ARMSTRONG","GAGARIN","SHEPHERD"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

15

Spelling Test

Well, you must have expected to find a spelling test somewhere in the book and here it is.

How to play

Your computer will put a word on the screen for a few seconds and then blank the screen and ask you to spell the same word correctly.

Programming Hints

If you think the time that you see the word on the screen is too long or too short you can alter the pause in line 170. If you feel that the words are too easy for a bright young thing like you then ask your parents to type in some more difficult words from line 400 onward. If you add more words, change the 50 in lines 70, 80, and 120 to

match the total number of words.

The computer will ask its questions at random so you shouldn't really know what is coming up next.

Program

```
10 REM ************************
20 REM *   SPELLING TEST   *
22 REM *                   *
24 REM *                   *
25 REM ************************
27 POKE53281,13:POKE53280,12
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 GOSUB10000
40 SC=0
60 HS=0
70 DIMW$(50)
80 FORJ=1TO50
90 READW$(J)
100 NEXTJ
110 FOR N=1TO20
120 R=INT(RND(1)*50)+1
130 PRINTCHR$(147)
140 PRINTLEFT$(AT$,2)SPC(4)"SCORE: ";SC
150 PRINTLEFT$(AT$,2)SPC(18)"HIGH SCORE:
 ";HS
160 PRINTLEFT$(AT$,8)SPC(18-(LEN(W$(R))/
2))W$(R):WW$=W$(R)
165 IFLEN(W$(R))<10 THENW$(R)=W$(R)+" ":
GOTO165
170 FORDL=1TO200:NEXTDL
180 PRINTLEFT$(AT$,8)SPC(9)"
         "
190 PRINTLEFT$(AT$,16)SPC(9)"WHAT WAS TH
E WORD?"
195 PRINTLEFT$(AT$,18)SPC(9);
200 INPUTA$
202 IFLEN(A$)<10 THENA$=A$+" ":GOTO202
210 IFA$=W$(R)THEN270
220 POKESO+1,20:POKESO+4,17:FORQQ=1TO30:
NEXTQQ:POKESO+4,16
230 PRINTLEFT$(AT$,8)SPC(11)"THE WORD WA
S "
```

```
235 PRINTLEFT$(AT$,10)SPC(17-(LEN(WW$)/2
))WW$
244 PRINTLEFT$(AT$,16)SPC(3)"
                                "
245 PRINTLEFT$(AT$,18)SPC(3)"
                                "
250 FORDL=1TO400:NEXTDL
260 GOTO300
270 POKESO+1,25:POKESO+4,17:FORQQ=1TO30:
NEXTQQ:POKESO+4,16
280 SC=SC+10
300 NEXTN
310 IFSC>HSTHENHS=SC
312 PRINTCHR$(147)
314 PRINTLEFT$(AT$,8)SPC(3)"YOUR FINAL S
CORE WAS......"SC
316 IFSC>HS THENPRINTLEFT$(AT$,10)SPC(3)
"THAT IS THE HIGHEST SCORE TODAY."
320 INPUT"       PLAY AGAIN (Y/N)";Q$
330 IFLEFT$(Q$,1)="N"THEN380
340 SC=0
360 GOTO110
380 END
400 DATA"QUIZ","MESSAGE","PAVEMENT"
410 DATA"BICYCLE","SPECIAL","BENEATH"
420 DATA"MOUNTAIN","LISTEN","SCHOOL"
430 DATA"TOMORROW","BUSINESS","ADDRESS"
440 DATA"PARALLEL","HEIGHT","LENGTH"
450 DATA"CEILING","EXPERT","KETTLE"
460 DATA"COLONEL","SURPRISE","FORECAST"
470 DATA"ATTACH","RHUBARB","MERINGUE"
480 DATA"DAFFODIL","KNOWLEDGE","YACHT"
490 DATA"TONGUE","MINIATURE","DINGHY"
500 DATA"AMATEUR","PUNCTUAL","ILLOGICAL"
510 DATA"GIRAFFE","PARSLEY","TRIANGLE"
520 DATA"LEGIBLE","MOSAIC","DISCIPLE"
530 DATA"AMEND","GUITAR","BELIEVE"
540 DATA"STATION","PRESENCE","SAVIOUR"
550 DATA"ALCOHOL","CABARET","SYLLABLE"
560 DATA"AQUATIC","PNEUMATIC"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
```

```
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

16

Speed Reading

```
   SCORE: 4      HIGH SCORE: 14



The sentence was:
the river is fast and deep




What was the sentence?
```

This is a game for those show-offs amongst you who can remember everything, write it down and get it right every time.

A sentence will appear on the screen for a few seconds and you must remember the sentence and the correct spelling of the words if you are going to get your points.

There is one big snag for clever little people though - the better your answers the faster the computer goes and you will only get to see the sentence for a split second before you have to answer.

How to play

Your computer will put the line up on the screen and ask you to type it in after a short pause.

You do not need to use caps, but remember to press RETURN.

If you get it wrong the screen will tell you.

Programming Hints

If you want to change the sentences to make it more difficult for yourself, or your friends, the lines to change are from 400 onward.

Program

```
10 REM *********************
20 REM *                   *
22 REM * SPEED READING      *
24 REM *                   *
25 REM *********************
27 GOSUB10000
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 POKE53281,5:POKE53280,13
40 SC=0
50 TM=300
60 HS=0
70 DIMW$(30)
80 FORJ=1TO30
90 READW$(J)
100 NEXTJ
110 FORN=1TO2
120 R=INT(RND(1)*30)+1
130 PRINTCHR$(147);CHR$(31);
132 FORT=0TO39:PRINTCHR$(18);CHR$(32);:N
EXTT:PRINT
135 PRINTLEFT$(AT$,2)CHR$(31);CHR$(18)"
      S P E E D   R E A D I N G      ";
137 FORT=0TO40:PRINTCHR$(18);CHR$(32);:N
EXTT:PRINTCHR$(144)
140 PRINTLEFT$(AT$,4)SPC(4)"SCORE: "SC
150 PRINTLEFT$(AT$,4)SPC(20)"HIGH SCORE:
  "HS
155 POKESO+1,60:POKESO+4,19:FORDL=1TO30:
NEXTDL:POKESO+4,18:POKESO+1,0
156 PRINTCHR$(149)
157 PRINTLEFT$(AT$,7)SPC(5)CHR$(18);:FOR
```

```
T=1TOLEN(W$(R)):PRINT" ";:NEXTT:PRINT
160 PRINTLEFT$(AT$,8)SPC(5)CHR$(18);W$(R
)
162 PRINTLEFT$(AT$,9)SPC(5)CHR$(18);:FOR
T=1TOLEN(W$(R)):PRINT" ";:NEXTT:PRINT
170 FORDL=1TO(TM-SC):NEXTDL
175 POKESO+1,60:POKESO+4,19:FORDL=1TO30:
NEXTDL:POKESO+4,18:POKESO+1,0
177 FORT=0TO2
180 PRINTLEFT$(AT$,7+T)SPC(5)"
                                "
182 NEXTT
190 PRINTLEFT$(AT$,16)SPC(5)CHR$(5);"WHA
T WAS THE SENTENCE?";CHR$(144)
195 PRINTLEFT$(AT$,18)SPC(5);
200 INPUTA$:A$=" "+A$+" "
202 IFLEN(A$)<32THENA$=A$+" ":GOTO202
210 IFLEFT$(A$,LEN(W$(R)))=W$(R)THENGOTO
270
220 POKESO+1,23:POKESO+4,17:FORDL=1TO30:
NEXTDL:POKESO+4,16
230 PRINTLEFT$(AT$,6)SPC(5)CHR$(5);"THE
SENTENCE WAS:";CHR$(144)
240 PRINTLEFT$(AT$,8)SPC(4)W$(R)
244 PRINTLEFT$(AT$,16)SPC(3)"
                              "
246 PRINTLEFT$(AT$,18)SPC(3)"
                              "
250 FORDL=1TO1000:NEXTDL
260 GOTO300
270 POKESO+1,14:POKESO+4,33:FORDL=1TO30:
NEXTDL:POKESO+4,32
280 SC=SC+10
290 NEXTN
300 NEXTN
310 IFSC>HSTHENHS=SC
312 PRINTCHR$(147)
314 PRINTLEFT$(AT$,8)SPC(7)"YOUR FINAL S
CORE WAS ";SC
316 IFSC=HSTHENPRINTLEFT$(AT$,10)SPC(3)"
THIS IS THE HIGHEST SCORE TODAY."
318 PRINTLEFT$(AT$,12)SPC(6);CHR$(18);"
HIT ANY KEY TO PLAY AGAIN "
320 WAIT197,64
330 GETQ$:IFQ$=""THEN330
340 SC=0
```

```
350 TM=220
360 GOTO110
370 :
380 END
390 :
400 DATA" FOUR GREEN TURTLES "
410 DATA" LONG GREEN PENCIL "
420 DATA" THE WHEEL IS ROUND "
430 DATA" THE BOOK IS NOT HEAVY "
440 DATA" THE LEAF IS GREEN "
450 DATA" LOOK AT THE TREE "
460 DATA" PICK UP THE RABBIT "
470 DATA" EXTEND THE LADDER "
480 DATA" THE KITTEN IS UP A TREE "
490 DATA" WE WAITED A LONG TIME "
500 DATA" WE DASHED THROUGH THE GATE "
510 DATA" THE UMBRELLA IS OPEN "
520 DATA" THE UMBRELLA IS CLOSED "
530 DATA" THE BOOK IS TOO HEAVY "
540 DATA" THE SHOP IS CLOSED "
550 DATA" OPEN THE CUPBOARD "
560 DATA" RAPID READING RESEARCH "
570 DATA" ELEPHANTS ARE LARGE MAMMALS "
580 DATA" THE GRASS IS VERY GREEN "
590 DATA" THE RIVER IS FAST AND DEEP "
600 DATA" GREY COMPUTER PERIPHERAL "
610 DATA" COMPLETLY CORRECTED "
620 DATA" RESEARCH AND DEVELOPMENT "
630 DATA" UNTANGLE THE KNOT "
640 DATA" FIERY RED FIRE ENGINE "
650 DATA" CROSS EXAMINE THE WITNESS "
660 DATA" HOLD UP THE MIRROR "
670 DATA" A LONG RUN OF LUCK "
680 DATA" THE SPANIARD OWNS A DOG "
690 DATA" SMALL PIECES OF BUTTER "
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

17

Area Estimation
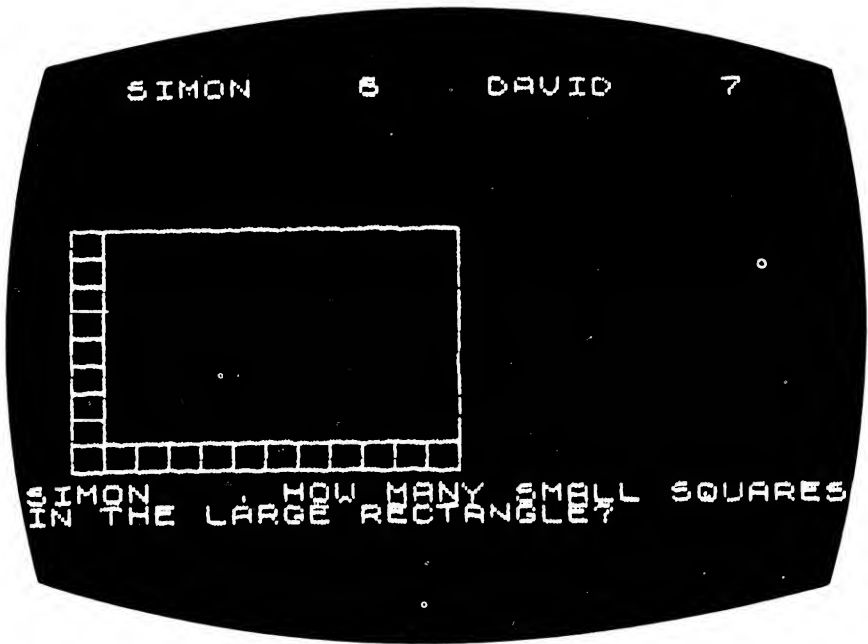
This game might also be called 'little boxes' as you are going to
have to decide how many small boxes are required to fill the area of
a large rectangular box.

How to play

Type in the names of the 2 players, pressing RETURN after each
name.

The computer will then show you a large rectangular box with one
small box set in a corner.

You must now decide how many small boxes you require to fill the
larger box.

Type in your estimated number and press RETURN.

If you are wrong the computer will fill in one line on the upright (perpendicular) side of the box and ask you to estimate again on the totals required.

If you still don't estimate correctly then the bottom line (horizontal) will be completed.

You should now be able to estimate the total by multiplying the two columns together.

Should you get it right this time you'll get a 'happy' bleep from your computer and you will move on to the next shape. A wrong answer at this stage will mean that the computer will fill in all the boxes and ask you again for the total. The computer will not let you move on until you have provided the correct results. The first player to reach a score of 10 wins the game.

Programming Hints

You can make the game a little easier by reducing the numbers in lines 90 and 110.

Program

```
10 REM ***********************
20 REM *                     *
22 REM *   AREA ESTIMATION    *
24 REM *                     *
25 REM ***********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 POKE53280,0:POKE53281,0:PRINTCHR$(158
)
35 GOSUB10000
40 PRINTCHR$(147):PRINTLEFT$(AT$,10)SPC(
2)"WHAT ARE THE PLAYERS NAMES?"
50 PRINTLEFT$(AT$,12)SPC(3);:INPUT"PLAYE
R 1 ";P$(1)
60 PRINTLEFT$(AT$,14)SPC(3);:INPUT"PLAYE
R 2 ";P$(2)
70 PRINTCHR$(147)
90 HT=INT(RND(1)*16)+3
```

```
110 WT=INT(RND(1)*30)+3
112 FORT=1TOHT
114 PRINTLEFT$(AT$,3+T)SPC(4);CHR$(180)
116 PRINTLEFT$(AT$,3+T)SPC(4+WT);CHR$(18
0)
120 NEXTT
130 FORT=1TOWT:PRINTLEFT$(AT$,3)SPC(3+T)
;CHR$(175):NEXTT
134 PRINTLEFT$(AT$,2+HT)SPC(4);CHR$(204)
135 PRINTLEFT$(AT$,3+HT)SPC(4);CHR$(204)
136 PRINTLEFT$(AT$,3+HT)SPC(5);CHR$(204)
140 FORT=3TOWT:PRINTLEFT$(AT$,3+HT)SPC(3
+T);CHR$(175):NEXTT
190 FORN=1TO2
200 PRINTLEFT$(AT$,22)SPC(6);P$(N);", HO
W MANY SMALL SQUARES "
205 PRINTLEFT$(AT$,23)SPC(7)" IN THE LAR
GE RECTANGLE"
207 PRINTLEFT$(AT$,24)SPC(7)"
           ";
210 PRINTLEFT$(AT$,24)SPC(7);:INPUTANS$
212 IFVAL(ANS$)=0THEN205
215 ANS=VAL(ANS$)
220 IFANS=WT*HT THEN 260
230 :
240 WA=WA+1
250 GOTO320
260 :
270 S(N)=S(N)+4-WA
275 PRINTCHR$(147)
280 PRINTLEFT$(AT$,1)SPC(4)P$(1);S(1)
281 PRINTLEFT$(AT$,1)SPC(24)P$(2);S(2)
282 IFS(1)>9OR S(2)>9 THENTHEN GOTO 700
290 WA=0
300 GOTO90
320 IFWA>1 THEN GOTO380
330 GOSUB600
370 GOTO500
380 IFWA>2THENGOTO430
390 GOSUB620
420 GOTO500
430 IFWA>3THENGOTO500
440 GOSUB660
500 NEXTN
510 GOTO190
600 PRINTLEFT$(AT$,2+HT)SPC(4)CHR$(108)
```

```
602 PRINTLEFT$(AT$,3+HT)SPC(4)CHR$(108)
605 FORT=2TOWT:PRINTLEFT$(AT$,3+HT)SPC(3
+T)CHR$(108)
607 POKESO+1,10+T:FORDL=1TO30:NEXTDL:POK
ESO+1,0
610 PRINTLEFT$(AT$,2+HT)SPC(3+T)CHR$(175
):NEXTT
615 RETURN
620 FORT=1TOHT-2
630 PRINTLEFT$(AT$,3+T)SPC(4)CHR$(108)
640 PRINTLEFT$(AT$,3+T)SPC(5)CHR$(180)
645 POKESO+1,10+T:FORDL=1TO30:NEXTDL:POK
ESO+1,0
650 NEXTT
655 PRINTLEFT$(AT$,2+HT)SPC(5)CHR$(108):
RETURN
660 FORTT=1TOHT
665 FORT=1TOWT:POKESO+1,10+T+TT
670 PRINTLEFT$(AT$,3+TT)SPC(3+T)CHR$(108
):NEXTT:NEXTTT
675 POKESO+1,0
680 RETURN
700 GOTO700
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,33 :REM WAVEFORM
10080 RETURN
```

18

Number Series

```
        N U M B E R   S E R I E S

    TRIES:  0              SCORE:  0



    ████ █████ ██████ ████ ███ ███████



     100   90   80   70   60   50


    WHAT IS THE NEXT NUMBER
```

This is a game where you have to think ahead and predict the next numbers to appear on the screen.

Your computer will start to print a string of numbers such as 11, 22, 33, 44 and will then stop and ask you to predict the next numbers which are, of course, 55.

How to play

As soon as you think you know the next number, press any key to stop the sequence then type in your answer and press RETURN.

The correct answer will be rewarded by scoring a point on the board and a wrong answer will mean that the computer will show you the right number before moving on to the next string of numbers. Remember that the quicker you stop the sequence, the

more points you score. As soon as you reach 50 points, the computer will stop and give you your average score.

Programming Notes

As the program is set to choose numbers at random you may sometimes get the same series twice running which is lucky for you as you should know the right answer.

Program

```
10 REM *********************
20 REM *                    *
22 REM *   NUMBER SERIES    *
24 REM *                    *
25 REM *********************
27 POKE53280,2:POKE53281,6
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 GOSUB10000
40 TR=0
50 SC=0
52 PRINTCHR$(147)
53 PRINTLEFT$(AT$,1)SPC(7);CHR$(5);"N U
M B E R   S E R I E S"
54 PRINTLEFT$(AT$,3)SPC(5)CHR$(152)"TRIE
S: "CHR$(5)TR
55 PRINTLEFT$(AT$,3)SPC(25,CHR$(152)"SCO
RE:"CHR$(158);SC
56 IFSC>=50THENGOTO300
57 SST=1
60 PRINTLEFT$(AT$,6)SPC(5)CHR$(18);" HIT
 ANY KEY TO MAKE A GUESS "
61 IFSC>=50THENGOTO300
62 SST=1
70 R=INT(RND(1)*30)-15
80 IFR=0THENGOTO70
90 IFR<0THENSST=100
95 POKESO+1,10+SST:POKESO+4,17:FORDL=1TO
100:NEXTDL:POKESO+4,16
100 PRINTLEFT$(AT$,10)SPC(5)SST" ";
110 FORJ=1TO5
112 FORDL=1TO700:NEXTDL
```

```
114 GETA$
116 IFA$<>""THENGOTO145
120 SST=SST+R
130 PRINTSST" ";
132 POKESO+1,10+SST:POKESO+4,17:FORDL=1T
O100:NEXTDL:POKESO+4,16
140 NEXTJ
145 PRINTLEFT$(AT$,13)SPC(1);CHR$(5);:WA
IT197,64
150 POKESO+4,16
155 INPUT"    WHAT IS THE NEXT NUMBER";A
NS
160 TR=TR+1
170 IFANS=SST+RTHENGOTO230
180 :
190 PRINTLEFT$(AT$,20)SPC(8)CHR$(158);"T
HE NEXT NUMBER IS "SST+R
200 FORDL=1TO1000:NEXTDL
210 PRINTCHR$(17)"      ";CHR$(18);" PRES
S ANY KEY TO CONTINUE "
215 GETKY$:IFKY$=""THEN215
220 GOTO52
230 PRINTLEFT$(AT$,20)SPC(14);CHR$(158);
"CORRECT!"
240 SC=SC+7-J
250 FORDL=1TO1000:NEXTDL
252 PRINTCHR$(17);CHR$(30);"      "CHR$(1
8);" PRESS ANY KEY TO CONTINUE ▣"
255 GETKY$:IFKY$=""THEN255
260 GOTO52
300 :
360 PRINTCHR$(147)
370 PRINTLEFT$(AT$,10)SPC(4)"YOUR AVERAG
E SCORE WAS "
380 PRINTLEFT$(AT$,13)SPC(8)SC"/"TR" = "
SC/TR
390 END
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,16 :REM WAVEFORM
10080 RETURN
```

19

Morse Code

```
        MORSE  CODE

  1.  SEND  MESSAGE
  2.  RANDOM  LETTERS
  3.  WORDS
  4. A TO Z  IN MORSE
  PRESS  1.  2  OR  3 OR  4.
```

If you are planning to become a sea captain or a pilot then this is the game for you. Even if you are just planning to help your parents on a yachting weekend you will be able to show off with this one.

There is plenty of fun here as well as you can set your own speed of reply to the computer; set your own messages; ask other people to translate what you have sent.

How to play

The computer will put up on the screen a menu which is a list of items from which you can make a choice. Menu is

1.   Send a message

2.   Random letters

3. Words

4. A to Z in morse

The computer will ask you to choose from 1, 2, 3 or 4.

You will then be asked to choose a speed which you would like from 1 to 100. As 100 is for professional morse code operators we suggest you start at 10.

Type in 10 and press RETURN

The computer will then ask you for your message.

If you have chosen 1 you could type in MAY THE FORCE BE WITH YOU, remembering to use capitals, press RETURN and the computer will play the message back to you in morse code.

When the message is complete the computer will return to the menu and ask you for your next choice.

No. 2 will mean that the computer will put random letters on the screen whilst sounding them at the same time. If you choose No. 3, words, the computer will sound out a word, at the speed you choose, which you must identify. When the computer completes the word it will ask you to type in the answer. If you are right - well done. If you are wrong however you will hear a nasty 'raspberry' and the computer will show you the correct answer before moving to another word.

Remember that your knowledge of morse code could save lives.

Programming Notes

The words in the program can be changed when typing in the data statements in lines 1050 to 1080.

Notice how the morse code is stored in lines 1100 to 1130.

Program

```
10 REM ***********************
20 REM *                     *
22 REM *   MORSE CODE        *
24 REM *                     *
25 REM ***********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,7:POKE53281,6:PRINTCHR$(5)
40 DIMM$(26)
42 DIMW$(20)
44 DIMC$(26)
50 FORJ=1TO26:READM$(J):NEXTJ
60 FORJ=1TO20:READW$(J):NEXTJ
70 FORJ=1TO26:READC$(J):NEXTJ
72 GOSUB10000
80 PRINTCHR$(147)
82 PRINTLEFT$(AT$,2)SPC(14)"MORSE CODE"
85 PRINTLEFT$(AT$,3)SPC(14);:FORT=1TO10:
PRINTCHR$(196);:NEXTT
90 PRINTLEFT$(AT$,6)SPC(10)"1. SEND MESS
AGE"
100 PRINTLEFT$(AT$,8)SPC(10)"2. RANDOM L
ETTERS"
110 PRINTLEFT$(AT$,10)SPC(10)"3. WORDS"
115 PRINTLEFT$(AT$,12)SPC(10)"4. PRACTIC
E "
120 PRINTLEFT$(AT$,14)SPC(10)CHR$(18);"
PRESS 1,2,3 OR 4 "
130 GETA$:IFA$=""THEN130
136 POKESO+1,10:POKESO+4,33:FORDL=1TO10:
NEXTDL:POKESO+4,32
137 IFA$="4"THENGOTO800
140 IFA$<"1"ORA$>"3"THEN130
141 PRINTLEFT$(AT$,16)SPC(10);
142 INPUT"SPEED (5 TO 50) ";SP
143 IFSP>50 OR SP<5 THENGOTO141
145 PRINTCHR$(147)
148 PRINTLEFT$(AT$,1)SPC(12)"SPEED ";SP
150 IFA$<>"1"THENGOTO170
160 GOTO400
170 IFA$<>"2"THENGOTO190
180 GOTO590
200 :
215 FORN=1TO10
```

```
216 PRINTCHR$(147)
217 PRINTLEFT$(AT$,1)SPC(12)"SPEED ";SP
220 R=INT(RND(1)*20)+1
230 FORJ=1TOLEN(W$(R))
240 L$=MID$(W$(R),J,1)
245 IFL$=" " THENGOTO300
250 L=ASC(L$)-64
260 FORK=1TOLEN(M$(L))
265 POKESO+1,0:POKESO+4,33
267 NO=1+VAL(MID$(M$(L),K,1))↑2
270 POKESO+1,35:FORDL=1TOSP*NO:NEXTDL:PO
KESO+1,0
275 FORDL=1TO5*SP:NEXTDL
280 NEXTK
290 FORDL=1TO130+SP:NEXTDL
300 NEXTJ
305 PRINTLEFT$(AT$,3)SPC(5);
308 INPUT"WHAT WAS THE WORD";Q$(1)
310 IFQ$(1)<>W$(R)THENGOTO316
312 :
314 PRINTLEFT$(AT$,8)SPC(12)"CORRECT!"
315 GOTO318
316 :
317 PRINTLEFT$(AT$,6)SPC(13)"WRONG!"
318 PRINTLEFT$(AT$,8)SPC(10)"THE WORD WA
S"
319 FORT=1TOLEN(W$(R))
320 PRINTLEFT$(AT$,10+T)SPC(10)MID$(W$(R
),T,1),C$(ASC(MID$(W$(R),T,1))-64)
325 NEXTT
330 FORDL=1TO1000:NEXTDL
334 PRINTLEFT$(AT$,27);CHR$(18);" PRESS
ANY KEY FOR THE NEXT WORD "
335 WAIT197,64:GETQQ$:IFQQ$=""THEN335
340 NEXTN
350 GOTO80
400 PRINTLEFT$(AT$,4)SPC(8)"WHAT IS YOUR
 MESSAGE? "
402 PRINTLEFT$(AT$,6)SPC(8);:INPUTI$
404 IFI$>"Z"ORI$<"A"THENPRINTLEFT$(AT$,1
7)SPC(2)"CAPITAL LETTERS,PLEASE":GOTO400
410 FORJ=1TOLEN(I$)
420 L$=MID$(I$,J,1)
422 IFL$=" "THENFORDL=1TO200:NEXTDL:GOTO
500
424 IFL$<"A"ORL$>"Z"THENGOTO510
```
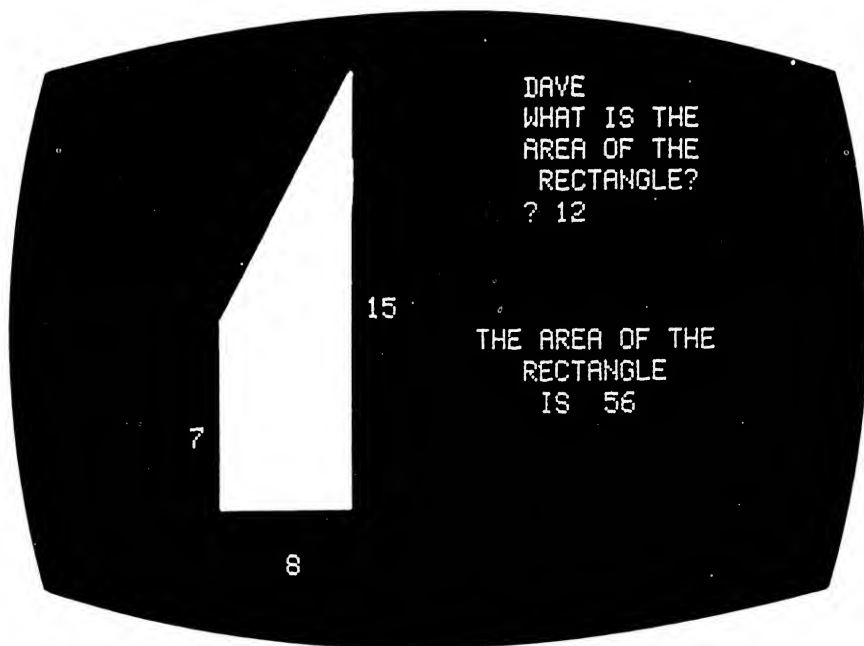
```
430 L=ASC(L$)-64
440 FORK=1TOLEN(M$(L))
445 POKESO+1,0:POKESO+4,33
447 NO=1+VAL(MID$(M$(L),K,1))↑2
450 POKESO+1,35:FORDL=1TOSP*NO:NEXTDL:PO
KESO+1,0
455 FORDL=1TO5*SP:NEXTDL
460 FORDL=1TO20:NEXTDL
470 NEXTK
474 PRINTLEFT$(AT$,10)SPC(7+J);L$
480 FORDL=1TO130-SP:NEXTDL
500 NEXTJ
510 FORDL=1TO500:NEXTDL
530 GOTO80
590 PRINTLEFT$(AT$,4)SPC(0);
600 FORJ=1TO100
605 IFJ/20=INT(J/20)THENPRINTCHR$(147);"
          SPEED";SP:PRINTCHR$(17)
610 R=INT(RND(1)*26)+1
620 PRINT" ",CHR$(R+64),C$(R)
630 FORK=1TOLEN(M$(R))
635 POKESO+1,0:POKESO+4,33
637 NO=1+VAL(MID$(M$(R),K,1))↑2
638 IFNO<2THEN650
640 POKESO+1,35:FORDL=1TOSP*NO:NEXTDL:PO
KESO+1,0
650 FORDL=1TO5*SP:NEXTDL
660 NEXTK
670 FORDL=1TO130-SP:NEXTDL
680 NEXTJ
690 FORDL=1TO500:NEXTDL
700 PRINTCHR$(147)
710 GOTO80
800 REM MORSE TAPPER USING F7
801 PRINTCHR$(147):PRINTLEFT$(AT$,8)SPC(
8)"USE "CHR$(18);
802 PRINT"F7"CHR$(146)" FOR MORSE TAPPER
"
803 PRINTLEFT$(AT$,12)SPC(8)"USE "CHR$(1
8);"SPACE BAR"CHR$(146);" TO STOP "
805 POKESO+1,0:POKESO+4,33
810 GETMO$:IFMO$=""THENPOKESO+1,0:GOTO81
0
815 IFMO$=CHR$(32)THENGOTO80
820 IFMO$=CHR$(136)THEN POKESO+1,33
830 WAIT197,64:GOTO810
```

```
1000 DATA"1300","3111","3131","3110","10
00","1131","3310"
1010 DATA"1111","1100","1333","3130","13
11","3300","3100"
1020 DATA"3330","1331","3313","1310","11
10","3000","1130"
1030 DATA"1130","1330","3113","3133","33
11"
1050 DATA"DELICATESSEN","NECESSITY","DEL
ICIOUS","PREHISTORIC","GOURMET"
1060 DATA"PHILOSOPHER","PRECIOUS","DISSE
CT","AGRICULTURE","SEMAPHORE"
1070 DATA"DIFFICULT","BUSINESS","MONASTR
Y","FRAGILE","ALPHABET"
1080 DATA"DAFFODIL","KNOWLEDGE","THROUGH
","PINEAPPLE","KANGAROO"
1100 DATA" ▪▀▀ "," ▀▀▀▪▪▪"," ▀▀▪ ▪▀▀ ▪"," ▀▀
▪▪▪ "," ▪ "," ▪▪▀▀ ▪"," ▀▀ ▀▀ ▪ "
1110 DATA" ▪▪▪▪"," ▪▪ "," ▪▀▀ ▀▀ ▀▀ "," ▀▀
▪▀▀ "," ▪▀▀ ▪▪"," ▀▀ ▀▀ "," ▀▀ ▪ "
1120 DATA" ▀▀ ▀▀ ▀▀ "," ▪▀▀ ▀▀ ▪"," ▀▀ ▀▀
▪▀▀"," ▪▀▀ ▪ "," ▪▪▪ "," ▀▀ "," ▪▪▀▀ "
1130 DATA" ▪▪▪▀▀ "," ▪▀▀ ▀▀ "," ▀▀ ▪▪▀▀ ",
" ▀▀ ▪▀▀ ▀▀ "," ▀▀ ▀▀ ▪▪"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,16 :REM  WAVEFORM
10090 RETURN
```

20

Areas

This game is a bit of a brain teaser and might drive you mad before you start to get it right. To begin with you might even need a pencil and some paper but really that is a bit of a cheat.

The object is to work out the total area of a rectangle and a triangle - together. Your parents will be highly impressed when you can tell them how much carpet they need for that funny shaped room upstairs.

How to play

You will be asked 'One or two players?'

Type in 1 or 2 and press RETURN

You will then be asked for the player's, or players', names. RETURN as before.

The computer will then show you a green rectangle with a red triangle on top. You will be given the length of three of the sides and asked to work out the total area.

If you do not get the answer correct first time the computer will then ask you to give the area of the rectangle first. If you answer this part correctly you will then be shown the triangle again and asked for its area. If either part of your answer is wrong the computer will give you the correct total area sum.

If you get the answer right first time, clever clogs, you will be given two points but if you answer in two halves you will get only one point for your correct answers.

To help you bend the rules the formula for area is

$$C \times B + \tfrac{1}{2} B \times (A-C)$$

Program

```
10 REM        ***********
20 REM        *         *
22 REM        *  AREAS  *
24 REM        *         *
25 REM        ***********
27 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
30 PRINTCHR$(147):GOSUB10000
35 POKE53280,6:POKE53281,15
60 INPUT"1 OR 2 PLAYERS";N
70 A$=CHR$(18):FORT=1TOA:A$=A$+" ":NEXTT
:A$=A$+CHR$(146)
72 FORT=1TOB:PRINTLEFT$(AT$,23-T)SPC(1)A
$:NEXTT
80 PRINTLEFT$(AT$,10)SPC(2)"WHAT ARE THE
 PLAYERS NAMES?"
90 FORJ=1TON
100 PRINTLEFT$(AT$,12)SPC(4)"PLAYER";J
110 PRINTLEFT$(AT$,14)SPC(4);:INPUTP$(J)
120 NEXTJ
122 PRINTCHR$(147)
130 FORL=1TON
140 A=INT(RND(1)*10)+2
150 B=INT(RND(1)*8)+3
```

```
160 C=A+B
162 IFC>=24THENGOTO140
170 A$=CHR$(30)+CHR$(18):FORT=1TOA:A$=A$
+" ":NEXTT:A$=A$+CHR$(146)
175 C$=CHR$(28)+CHR$(18)+CHR$(169):FORT=
1TOA-1:C$=C$+" ":NEXTT:C$=C$+CHR$(146)
177 X=13+C/2
180 FORT=1TOB:PRINTLEFT$(AT$,X-T)SPC(5)A
$;:NEXTT
185 FORT=BTOC:PRINTLEFT$(AT$,X-T)SPC(5+(
T-B))LEFT$(C$,LEN(C$)-(T-B)-1):NEXTT
240 PRINTLEFT$(AT$,X-(B/2))SPC(2-INT(B/1
0))B
250 PRINTLEFT$(AT$,13)SPC(5+A)C
260 PRINTLEFT$(AT$,X+1)SPC(4+A/2)A
262 GOSUB650
265 PRINTLEFT$(AT$,6)SPC(25)P$(L)
270 PRINTLEFT$(AT$,7)SPC(24)"WHAT IS THE
"
275 PRINTLEFT$(AT$,8)SPC(24)"TOTAL AREA?
"
280 PRINTLEFT$(AT$,10)SPC(24);:INPUTANS
290 IFANS=A*B+A/2*(C-B)THENGOTO550
310 FORSL=50TO1STEP-1:POKESO+1,SL:NEXTSL
:POKESO+1,0
312 GOSUB650
315 PRINTLEFT$(AT$,6)SPC(24)P$(L)
320 PRINTLEFT$(AT$,7)SPC(24)"WHAT IS THE
"
325 PRINTLEFT$(AT$,8)SPC(24)"AREA OF THE
"
327 PRINTLEFT$(AT$,9)SPC(24)" RECTANGLE?
"
330 PRINTLEFT$(AT$,10)SPC(24);:INPUTRC
340 IFRC=A*BTHENGOTO370
350 FORSL=50TO1STEP-1:POKESO+1,SL:NEXTSL
:POKESO+1,0
360 PRINTLEFT$(AT$,14)SPC(21)"THE AREA O
F THE"
365 PRINTLEFT$(AT$,15)SPC(21)"   RECTANG
LE   "
367 PRINTLEFT$(AT$,16)SPC(21)"     IS ";A
*B
368 FORDL=1TO1000:NEXTDL
370 GOSUB650
372 PRINTLEFT$(AT$,7)SPC(24)"WHAT IS THE
"
```

```
375 PRINTLEFT$(AT$,8)SPC(24)"AREA OF THE
"
377 PRINTLEFT$(AT$,9)SPC(24)" TRIANGLE ?
"
380 PRINTLEFT$(AT$,10)SPC(24);:INPUTTG
390 IFTG=A/2*(C-B) THEN GOTO420
400 :
410 FORSL=50TO1STEP-1:POKESO+1,SL:NEXTSL
:POKESO+1,0
411 PRINTLEFT$(AT$,14)SPC(21)"THE AREA O
F THE "
412 PRINTLEFT$(AT$,15)SPC(21)"   TRIANGL
E    "
417 PRINTLEFT$(AT$,16)SPC(21)"    IS ";A
/2*(C-B)
418 FORDL=1TO1000:NEXTDL
420 GOSUB650
421 PRINTLEFT$(AT$,7)SPC(24)"WHAT IS THE
"
422 PRINTLEFT$(AT$,8)SPC(24)"TOTAL AREA?
"
430 PRINTLEFT$(AT$,10)SPC(24);:INPUTANS
440 IFANS=A*B+A/2*(C-B)THENGOTO470
450 FORSL=50TO1STEP-1:POKESO+1,SL:NEXTSL
:POKESO+1,0
460 GOTO500
470 FORQ=1TO4:FORT=1TO10:FORTT=1TO5:POKE
SO+1,Q*T*TT:NEXTTT,T,Q:POKESO+1,0
480 S(L)=S(L)+1
490 GOTO562
500 PRINTLEFT$(AT$,14)SPC(23)"THE TOTAL
AREA "
502 PRINTLEFT$(AT$,15)SPC(23)"    IS"A*B+
A/2*(C-B)
504 FORDL=1TO1000:NEXTDL
506 PRINTCHR$(147)
510 GOTO570
550 FORQ=1TO4:FORT=1TO10:FORTT=1TO5:POKE
SO+1,Q*T*TT:NEXTTT,T,Q:POKESO+1,0
560 S(L)=S(L)+2
562 PRINTCHR$(147)
570 PRINTLEFT$(AT$,1)SPC(4)P$(1);" :"S(1
)
575 PRINTLEFT$(AT$,1)SPC(24)P$(2);" :";S
(2)
580 NEXTL
```

```
600 GOTO130
650 FORT=5TO22:PRINTLEFT$(AT$,T)SPC(21)"
                    ":NEXTT:RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

21

Missing Letter


```
      questions:  5
player 1: 26    player 2: 33



              saucr



         missing letter?


           correct!
```

If you are one of those poor souls who are always being told by someone that you miss letters in words don't worry too much because it's supposed to mean that you are clever and that your brain works faster than your hands. However, it's not a good idea to go on doing it so we have invented this game to help you.

Words are going to appear on the screen and you are going to have to spot the missing letter.

An example
            sper   should be   spear

How to play

Your computer will ask you 1 or 2 players?

Type in 1 or 2 and press RETURN.

In the middle of the screen will appear a word with a letter missing.

To complete the word you press the letter of your choice.

It is **not necessary** to press the RETURN key

If your answer is correct the computer will tell you that your decision was correct, award you a number of points depending on the speed of your response and move on to the next word.

Wrong answers will mean no points and the computer will move on to the other player - if there are two playing.

Programming Notes

It is possible to change the words used in the program by replacing those in the data statements of lines 350 to 440 with your own selection. If you increase the number of words though, change the 50 in lines 60, 90 and 190 to match the total number of words.

Program

```
10 REM *********************
20 REM *                   *
22 REM * MISSING LETTERS   *
24 REM *                   *
25 REM *********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147):GOSUB10000
35 POKE53280,7:POKE53281,14:PRINTCHR$(14
4)
40 PRINTLEFT$(AT$,2)SPC(3);:INPUT"ONE OR
 TWO PLAYERS  ";P$
50 IFP$<"1"ORP$>"2"THEN40
55 P=VAL(P$)
60 DIMW$(50):P=VAL(P$)
70 DIMS(2)
80 Q=0
82 IS=100
```

```
90 FORJ=1TO50
100 READW$(J)
110 NEXTJ
120 PRINTCHR$(147)
125 PRINTLEFT$(AT$,1)SPC(12)"QUESTIONS:
0"
130 FORJ=1TOP
140 PRINTLEFT$(AT$,3)SPC(J*20-17);"PLAYE
R "J;": 0"
150 NEXTJ
160 Q=Q+1
170 FORJ=1TOP
180 PRINTLEFT$(AT$,3)SPC(J*20-17);"PLAYE
R "J;": ";S(J)
190 R=INT(RND(1)*50)+1
200 R1=INT(RND(1)*5)+1
210 D$=MID$(W$(R),1,R1-1)+MID$(W$(R),R1+
1)
215 PRINTLEFT$(AT$,10)SPC(15);"
            "
220 PRINTLEFT$(AT$,10)SPC(15);" ";D$
222 PRINTLEFT$(AT$,11)SPC(15);"
       "
224 PRINTLEFT$(AT$,9)SPC(15);"
        "
230 PRINTLEFT$(AT$,16)SPC(12);"MISSING L
ETTER?"
235 WAIT197,64
240 GETA$
250 IFA$=""THENIS=IS-0.5:GOTO240
252 CD=ASC(A$+CHR$(0))
254 IFCD>=97 THENGOTO260
256 REM  A$=CHR$(CD+32)
260 IFIS<10THENIS=10
270 IFA$<>MID$(W$(R),R1,1)THENGOTO280
272 M$=" CORRECT! "
274 S(J)=S(J)+INT(IS/10)
275 IS=100
276 FORDL=1TO200STEP3:POKESO+1,DL:NEXTDL
:POKESO+1,0
278 GOTO290
280 M$="  WRONG!  "
282 FORDL=200TO1STEP-3:POKESO+1,DL:NEXTD
L:POKESO+1,0
290 PRINTLEFT$(AT$,20)SPC(14);M$
300 PRINTLEFT$(AT$,1)SPC(22);Q
```

```
310 PRINTLEFT$(AT$,3)SPC(J*20-17);"PLAYE
R ";J;": ";S(J)
320 FORDL=1TO500:NEXTDL
325 PRINTLEFT$(AT$,20)SPC(14);"
          "
330 POKE198,0:NEXTJ
340 POKE198,0:GOTO160
350 DATA"HORSE","STREET","DAILY","MONEY"
,"PEOPLE"
360 DATA"YELLOW","BOTTLE","ORANGE","SAUC
ER","BREAKFAST"
370 DATA"COMPASS","KITTEN","ENGINE","HIS
TORY","SAUSAGE"
380 DATA"ADDRESS","CEILING","EXPERT","MY
STERY","COMPUTER"
390 DATA"PROMISE","CLOWN","MESSAGE","EAR
LY","LISTEN"
400 DATA"MAGIC","SCHOOL","TOMORROW","KET
TLE","DETACH"
410 DATA"MECHANIC","CYLINDER","SCIENTIFI
C","ILLOGICAL","GIRAFFE"
420 DATA"PARSLEY","TRIANGLE","LEGIBLE","
MEDICINE","PRESENCE"
430 DATA"TRIANGLE","PENGUIN","ALPHABET",
"DAFFODIL","KNOWLEDGE"
440 DATA"YACHT","FIERY","KANGAROO","RASP
BERRY","CHRISTMAS"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM   ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,17 :REM  WAVEFORM
10080 RETURN
```

22

Duck Shoot
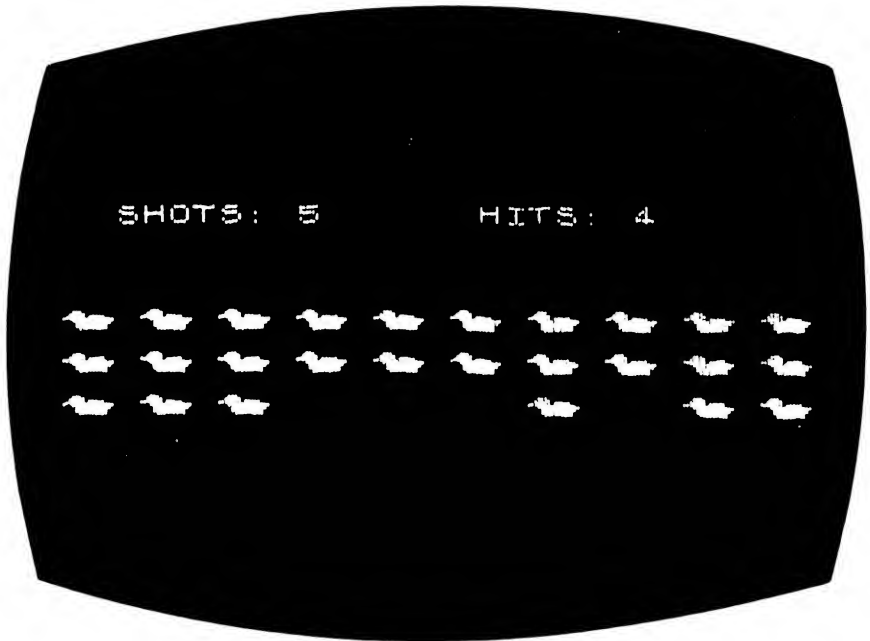
Here is a game for your memory, your speed and your eyesight.

You will be shown a screen full of ducks - thirty in total - and then you will have to solve a multiplication sum before you can shoot at the sitting ducks.

Just in case you are worried about the ducks - they are not real, we borrowed them from a fairground.

How to play

You will be asked to solve a multiplication table which will be selected at random by your computer. If you get the answer right and type in properly you will be allowed to shoot at the ducks.

It is not as simple as it sounds however because the gun moves from

left to right and back again. You have to stop the gun which will fire on its own at the row of ducks. If you stop the gun in the wrong place the shot may go between a row of the 'quackers' and leave you without a score despite your correct answer to the sum.

To fire the gun you must press the space bar.

Your score board will show you how many shots were on target.

The trick is to be clever - and fast.

Program

```
10 REM *********************
20 REM *                   *
22 REM *  DUCK  SHOOT      *
24 REM *                   *
25 REM *********************
27 POKE52,48:POKE56,48:CLR
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 POKE53280,5:POKE53281,5
35 GOSUB7000:PRINTCHR$(147):GOSUB10000
40 HT=0:SH=0
100 FORJ=2TO39STEP3
105 FORK=6TO10STEP2
110 POKE646,K+1:PRINTLEFT$(AT$,K)SPC(J)C
HR$(35);CHR$(36)
115 NEXTK
120 NEXTJ
130 N1=INT(RND(1)*12)+1
140 N2=INT(RND(1)*12)+1
145 PRINTLEFT$(AT$,19)SPC(8)CHR$(144);"W
HAT IS ";CHR$(5);N1;CHR$(144);" X "CHR$(
5);N2
147 PRINTLEFT$(AT$,21)SPC(8)"
                             "
149 PRINTLEFT$(AT$,21)SPC(8);
150 INPUTANS$
155 IFVAL(ANS$)<1 THENGOTO165
157 ANS=VAL(ANS$)
160 IFANS=N1*N2 THENGOTO200
165 POKESO+1,50:POKESO+4,33:FORDL=1TO30:
NEXTDL:POKESO+4,16
```

```
170 GOTO145
200 CC=1
210 CD=1
215 POKESO+1,28:POKESO+4,33:FORDL=1TO30:
NEXTDL
217 PRINTLEFT$(AT$,19)SPC(8)"
                              "
218 PRINTLEFT$(AT$,20)SPC(5)"
                            "
219 PRINTLEFT$(AT$,21)SPC(5)"
                              "
220 PRINTLEFT$(AT$,18)SPC(CC)" "
230 CC=CC+CD
235 POKESO+1,10+CC
240 IFCC>39 ORCC<1 THENCD=-CD
250 PRINTLEFT$(AT$,18)SPC(CC)CHR$(37)
260 GETKY$:IFKY$<>" "THENGOTO220
270 SH=SH+1
275 POKESO+4,129
280 FORJ=17TO5STEP-1
285 POKESO+1,J
287 S=PEEK(984+40*J+CC)
290 IFS=35ORS=36 THENGOTO330
300 PRINTLEFT$(AT$,J)SPC(CC)".";
305 PRINTLEFT$(AT$,J)SPC(CC)" ";
310 NEXTJ
314 POKESO+4,128
320 GOTO380
330 POKESO+4,17:FORB=1TO10
340 POKESO+1,B:FORDL=40TO60STEP2:POKESO+
1,DL:NEXTDL
350 NEXTB:POKESO+4,16
360 PRINTLEFT$(AT$,J)SPC(CC-1)"    "
370 HT=HT+1
380 PRINTLEFT$(AT$,1)SPC(4)CHR$(144);"SH
OTS: "SH"             HITS: "HT
385 PRINTCHR$(19)
395 PRINTLEFT$(AT$,18)SPC(CC)" "
400 IFHT=39THEN END
410 GOTO130
7000 REM *** READ IN  DATA ***
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
```

```
34)OR1
7060 FORI=0TO23:READA:POKE12568+I,A:NEXT
I
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
8000 DATA 28,62,254,31,15,15,7,3,0,0,248
,255,254,252,252,240
8010 DATA0,24,24,60,255,255,255,255
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM    PITCH
10040 POKESO+5,9 :REM    ATTACK/DECAY
10050 POKESO+6,240:REM   SUSTAIN/RELEASE
10060 POKESO+24,15:REM   VOLUME
10070 POKESO+4,16 :REM   WAVEFORM
10080 RETURN
```

23

Missing Numbers


```
ROGER    :  2              TRACY    :  2


              WRONG!
    THE MISSING NUMBER WAS 93

        46 + ?? = 139



WHAT IS THE MISSING NUMBER.
ROGER   ?
```

A competition designed to see who is quickest between two players at working out the missing number. You can play on your own but it's no fun if there isn't anyone to show off to.

You'll be given a selection of sums and you will have to provide the number that has been replaced by a question mark.

Examples:

$$234 + \ ? \ = 563$$

$$? \ - \ 56 = 834$$

$$169 - \ 73 = \ ?$$

How to play

You will be asked the players' names which you type in, and press RETURN

The computer will then ask you a question of the type shown above.

Type in your answer and press RETURN

Players will be asked questions alternately.

A wrong answer will mean a 'raspberry' buzz and the next question will move to your opponent.

Scores are shown on the screen.

Program

```
10 REM *******************
20 REM *                 *
22 REM *  MISSING NUMBER  *
24 REM *                 *
25 REM *******************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 GOSUB10000:POKE53280,5:POKE53281,2
35 PRINTCHR$(147)
40 PRINTLEFT$(AT$,8)SPC(4)"WHAT ARE THE
PLAYERS NAMES?"
70 INPUT "      PLAYER ONE: ";P$(1)
75 P$(1)=CHR$(159)+P$(1)
80 PRINTLEFT$(AT$,12)SPC(6)"PLAYER ONE:
";P$(1);CHR$(144)
85 POKESO+1,40:FORDL=1TO100:NEXTDL:POKES
O+1,0
90 INPUT"      PLAYER TWO: ";P$(2)
95 P$(2)=CHR$(5)+P$(2)
100 PRINTLEFT$(AT$,16)SPC(6)"PLAYER TWO:
 "P$(2)
110 POKESO+1,35:FORDL=1TO100:NEXTDL:POKE
SO+1,0
120 FORDL=1TO200:NEXTDL
125 PRINTCHR$(147)
```

```
130 POKESO+1,45:FORDL=1TO100:NEXTDL:POKE
SO+1,0
180 MAX=89
190 MIN=10
200 FORC=1TO2
210 R(1)=INT(RND(1)*MAX)+MIN
220 R(2)=INT(RND(1)*MAX)+MIN
230 SIG=INT(RND(1)*2)
240 IFSIG=0THENSIG=-1
250 R(3)=R(1)+R(2)*SIG
255 IFR(3)<0 THENGOTO210
260 R=INT(RND(1)*3)+1
270 IFR=1THENPRINTLEFT$(AT$,12)SPC(11)"
??":GOTO280
275 PRINTLEFT$(AT$,12)SPC(11);R(1)
280 IFR=2THENPRINTLEFT$(AT$,12)SPC(16)"
??":GOTO290
285 PRINTLEFT$(AT$,12)SPC(16)R(2)
290 IFR=3THENPRINTLEFT$(AT$,12)SPC(21)"?
?  ":GOTO300
295 PRINTLEFT$(AT$,12)SPC(21);R(3);"  "
300 IFSIG<0THENPRINTLEFT$(AT$,12)SPC(14)
"_"
305 IFSIG>0THENPRINTLEFT$(AT$,12)SPC(14)
"+"
310 PRINTLEFT$(AT$,12)SPC(19)"="
320 PRINTCHR$(158)
330 PRINTLEFT$(AT$,18)SPC(3)"WHAT IS THE
 MISSING NUMBER,";P$(C)"?          "
332 PRINTLEFT$(AT$,20)SPC(7);"
     "
334 PRINTLEFT$(AT$,20)SPC(7);CHR$(158);"
           "
338 PRINTLEFT$(AT$,20)SPC(7);CHR$(158);
340 INPUTANS$
345 IFVAL(ANS$)<1 THEN GOTO334
350 ANS=VAL(ANS$):IFANS<>R(R)THENGOTO430
360 FORDL=1TO10:FORDD=1TO20:POKESO+1,DL*
DD:NEXTDD,DL:POKESO+1,0
370 PRINTLEFT$(AT$,8)SPC(13)"CORRECT!"
380 S(C)=S(C)+1
390 PRINTLEFT$(AT$,2)SPC(4)P$(1);": ";S(
1)
400 PRINTLEFT$(AT$,2)SPC(23);P$(2);": ";
S(2)
410 IFS(1)=20 OR S(2)=20 THEN GOTO470
```

```
420 GOTO445
430 FORDL=10TO1STEP-1:FORDD=1TO20:POKESO
+1,DL*DD:NEXTDD,DL:POKESO+1,0
440 PRINTLEFT$(AT$,6)SPC(16)"WRONG!"
442 PRINTLEFT$(AT$,8)SPC(6)"THE MISSING
NUMBER WAS ";R(R)
445 FORDL=1TO1000:NEXTDL
450 PRINTLEFT$(AT$,6)SPC(10)"
            "
454 PRINTLEFT$(AT$,8)SPC(4)"
                  "
460 NEXTC
465 GOTO200
470 FORW=1TO2
480 IFS(W)<>20 THENGOTO500
490 PRINTLEFT$(AT$,5)SPC(8)P$(W);" IS TH
E WINNER!"
500 NEXTW
510 END
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,33 :REM WAVEFORM
10080 RETURN
```
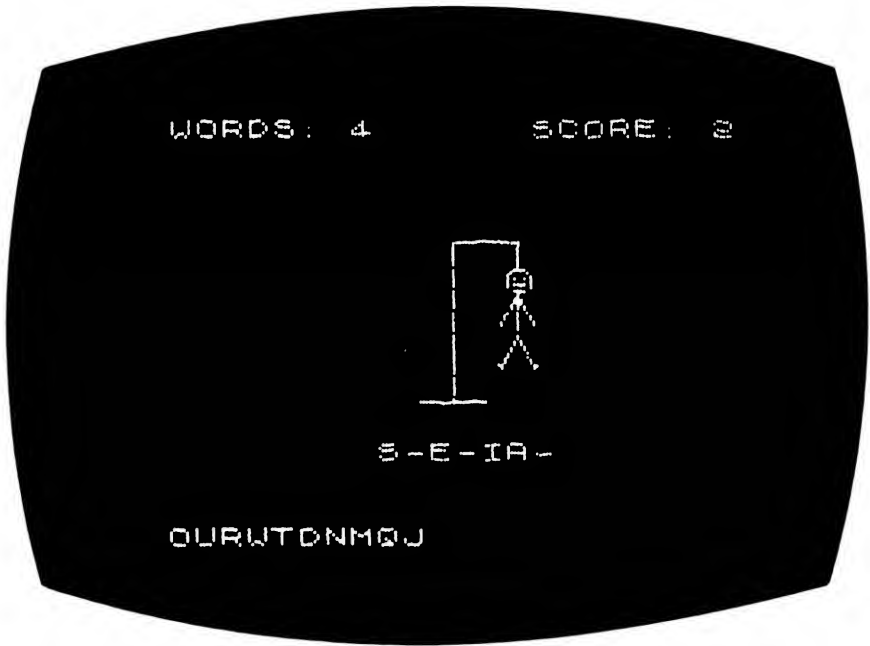
24

Hangman

This is a game you may have played before using paper and pencil but now you are up against a computer.

The object of the game is to spell out a word correctly, in as few moves as possible, to save a man from being hanged. Every correct answer helps to complete the word, every wrong answer helps to hang the poor man.

You can, if you wish, change the title to hangwoman.

How to play

The computer will put on the screen a five or more letter word and will ask you for a letter to help fill in the blanks.

You don't need to press the RETURN key, just type the letter of your choice and the computer will do the rest.

Each letter you get right will be filled in but each letter you get wrong will help to complete the gallows, the rope and the victim.

The computer will also show the letters you have chosen incorrectly so that you don't choose them again and hang the man in error.

Scores are kept at the top of the screen.

Remember - think before you print - it could save a life.

Programming Notes

The words for selection can be changed when typing in the data in lines 700 to 790. If you increase the number of words, change the 50 in lines 27, 50 and 80 to match the total number of words.

Program

```
10 REM ************************
20 REM *                      *
22 REM *       HANGMAN        *
24 REM *                      *
25 REM ************************
27 DIMW$(50)
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 C$="":FL=0
34 SC=0:NW=0:PRINTCHR$(147)
35 POKE53280,14:POKE53281,12
40 GOSUB1000:GOSUB10000
50 FORJ=1TO50
60 READW$(J)
70 NEXTJ
80 R=INT(RND(1)*50)+1
82 LC=0:C$=""
90 CT=10
92 PRINTLEFT$(AT$,2)SPC(4)"WORDS:"NW.
95 PRINTLEFT$(AT$,2)SPC(25)"SCORE:"SC
100 FORJ=1TOLEN(W$(R))
110 PRINTLEFT$(AT$,20)SPC(11+J*2)CHR$(18
3);CHR$(32)
```

```
115 C$=C$+" "
120 NEXTJ
200 GET LTR$:IF LTR$=""THEN200
210 IFLTR$<"A"OR LTR$>"Z" THEN GOTO200
220 FORJ=1TOLEN(W$(R))
230 IFLTR$=MID$(W$(R),J,1)THENPRINTLEFT$
(AT$,19)SPC(11+J*2);LTR$:FL=1
240 IFLTR$=MID$(W$(R),J,1)THENC$=LEFT$(C
$,(J-1))+LTR$+MID$(C$,(J+1))
250 NEXTJ
260 IFC$=W$(R)THENGOTO600
270 IFFL=1THENFL=0:GOTO200
280 PRINTLEFT$(AT$,22)SPC(4+LC)LTR$
290 LC=LC+1
300 IFLC<>1THENGOTO320
310 PRINTLEFT$(AT$,17)SPC(15)A$(1)
320 IFLC<>2 THENGOTO340
330 PRINTLEFT$(AT$,16)SPC(16)A$(2)
340 IFLC<>3THENGOTO360
350 PRINTLEFT$(AT$,8)SPC(17)A$(3)
360 IFLC<>4THEN GOTO380
370 PRINTLEFT$(AT$,9)SPC(21)A$(4)
380 IFLC<>5THENGOTO400
390 PRINTLEFT$(AT$,10)SPC(21)A$(5)
400 IFLC<>6THENGOTO420
410 PRINTLEFT$(AT$,11)SPC(21)A$(6)
420 IFLC<>7THENGOTO440
430 PRINTLEFT$(AT$,11)SPC(20)A$(7)
440 IFLC<>8THENGOTO460
450 PRINTLEFT$(AT$,11)SPC(22)A$(8)
460 IFLC<>9THENGOTO475
470 PRINTLEFT$(AT$,13)SPC(20)A$(9)
475 IFLC<10THENGOTO200
480 IFLC<>10 THEN GOTO660
490 PRINTLEFT$(AT$,13)SPC(22)A$(10)
500 GOTO200
600 REM WIN
610 FORJ=1TO50:FORJJ=1TO5:POKESO+1,J*JJ:
NEXTJJ,J:POKESO+1,0
620 FORDL=1TO500:NEXTDL
630 SC=SC+1
640 NW=NW+1
650 PRINTCHR$(147):GOTOSO
660 REM LOSE
665 FORJ=50TO1STEP-1:FORJJ=1TO5:POKESO+1
,J*JJ:NEXTJJ,J:POKESO+1,0
```

```
670 FORDL=1TO500:NEXTDL
675 PRINTCHR$(147):PRINTLEFT$(AT$,10)SPC
(12)" THE WORD WAS"
680 PRINTLEFT$(AT$,12)SPC(19-LEN(W$(R))/
2);W$(R)
685 FORDL=1TO1000:NEXTDL
690 NW=NW+1
695 GOTO650
700 DATA"SCHOOL","TOMORROW","ADDRESS","L
ENGTH","EXPERT"
710 DATA"KETTLE","COMPUTER","LEGIBLE","M
EDICINE","BELIEVE"
720 DATA"MYSTERY","DOLPHIN","FEBRUARY","
BLANKET","SPECIAL"
730 DATA"PAVEMENT","FRAGILE","DIFFICULT"
,"RHUBARB","PENGUIN"
740 DATA"ALPHABET","DAFFODIL","YACHT","S
QUARE","THROUGH"
750 DATA"TONGUE","RASPBERRY","CUSHION","
SOLDIER","GENIUS"
760 DATA"SPECTRUM","CYLINDER","OIL","DIS
PENSER","SCATTER"
770 DATA"CIRCUIT","DEFINITE","PERCH","CO
NSTRUCT","QUESTION"
780 DATA"WEATHER","DISTURB","EXHAUST","M
OVEMENT","SEMBLANCE"
790 DATA"BANTAM","OCTOBER","SEPTEMBER","
ANNUAL","PROPORTION"
1000 REM SET UP CHARACTER STRINGS
1010 FORT=1TO9:A$(1)=A$(1)+CHR$(183):NEX
TT
1020 FORT=1TO8:A$(2)=A$(2)+CHR$(170)+CHR
$(157)+CHR$(145):NEXTT
1030 FORT=1TO4:A$(3)=A$(3)+CHR$(175):NEX
TT
1040 A$(4)=CHR$(180)
1050 A$(5)=CHR$(119)
1060 A$(6)=CHR$(18)+CHR$(32)+CHR$(17)+CH
R$(157)+CHR$(32)+CHR$(146)
1070 A$(7)=CHR$(110):A$(8)=CHR$(109)
1080 A$(9)=CHR$(110):A$(10)=CHR$(109)
1090 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
```

```
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,33 :REM WAVEFORM
10080 RETURN
```

25

Organ

Here is your chance to become the next Stevie Wonder, Mozart or maybe just play 'Happy Birthday' to your parents on your computer.

You'll be able to type your own tunes into the computer's memory and have them played back to you.

How to play

The screen will show an organ keyboard, with each key labelled with the letter you must press to get that particular note. Everytime you press a key, a coloured star will move to that organ key on the screen, and you will get a musical note from your computer.

When you have finished your tune and wish to replay, press Function key 1 and the computer will play back the whole tune for you.

Instructions on how to clear the memory, and write a new tune, will
appear on the screen.

Program

```
10 REM ************************
20 REM *                      *
22 REM *          ORGAN       *
24 REM *                      *
25 REM ************************
27 POKE53281,1:POKE53280,6
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147);CHR$(144):GOSUB10000
35 DIM HI(1500),LO(1000),X(1000),Y(1000)
40 C=0:X1=16:Y1=19
50 N=0:GOSUB1000
60 AA=PEEK(197):IFAA=64THENHI=0:LO=0:A$=
"":X=16:Y=19
65 GETA$
80 IFA$="Q"THENHI=7:LO=119:X=6
90 IFA$="E"THENHI=8:LO=225:X=6:Y=7
100 IFA$="R"THENHI=9:LO=247:X=6:Y=11
110 IFA$="Y"THENHI=11:LO=218:X=6:Y=19
120 IFA$="U"THENHI=13:LO=78:X=6:Y=23
130 IFA$="I"THENHI=14:LO=239:X=6:Y=27
160 IFA$="S"THENHI=8:LO=97:X=10:Y=5
170 IFA$="D"THENHI=9:LO=104:X=10:Y=9
180 IFA$="F"THENHI=10:LO=143:X=10:Y=13
190 IFA$="G"THENHI=11:LO=48:X=10:Y=17
200 IFA$="H"THENHI=12:LO=143:X=10:Y=21
210 IFA$="J"THENHI=14:LO=24:X=10:Y=25
220 IFA$="K"THENHI=15:LO=210:X=10:Y=29
230 IFA$="L"THENHI=16:LO=195:X=10:Y=33
240 IFA$=CHR$(133)THENGOTO310
250 IFA$=CHR$(136)THENC=0:PRINTCHR$(147)
:GOTO40
252 IFX1>7THENPRINTLEFT$(AT$,X1)SPC(Y1)"
 ":GOTO255
253 PRINTLEFT$(AT$,X1)SPC(Y1)CHR$(18);CH
R$(32);CHR$(146)
255 IFX>7THENPRINTLEFT$(AT$,X)SPC(Y)CHR$
(42):GOTO257
256 PRINTLEFT$(AT$,X)SPC(Y)CHR$(18);CHR$
(42);CHR$(146)
```

```
257 X1=X:Y1=Y
260 POKESO+1,HI:POKESO,LO
270 C=C+1
272 IFC>1000THENC=1000
280 HI(C)=HI:LO(C)=LO
290 X(C)=X:Y(C)=Y
300 GOTO60
318 PRINTCHR$(147):GOSUB1000
320 FORJ=1TOC:X=X(J):Y=Y(J)
321 IFX1>7THENPRINTLEFT$(AT$,X1)SPC(Y1)"
    ":GOTO325
322 PRINTLEFT$(AT$,X1)SPC(Y1)CHR$(18);CH
R$(32);CHR$(146)
325 IFX>7THENPRINTLEFT$(AT$,X)SPC(Y)CHR$
(42):GOTO329
326 PRINTLEFT$(AT$,X)SPC(Y)CHR$(18);CHR$
(42);CHR$(146)
329 X1=X:Y1=Y
330 POKESO+1,HI(J):POKESO,LO(J)
335 FORDL=1TO45:NEXTDL
337 X1=X:Y1=Y
340 NEXTJ
350 GOTO60
1000 REM ** THE SYMBOL " | " IS 'SHIFT'
AND 'B' TOGETHER
1002 REM THE SEQUENCE " ▓  ▒ " IS 'RVS
ON'+'CBM AND H TOGETHER'+'SPACE'
1004 REM + 'CBM AND N TOGETHER'+'RVS OFF
'
1006 REM 'RVS ON' IS ACHIEVED BY 'CTRL A
ND 9 TOGETHER'
1008 REM 'RVS OFF' IS ACHIEVED BY 'CTRL
AND 0 TOGETHER'
1009 PRINT"    ▓
        ▌"
1010 PRINT"   | ▓  ▒ ▓  ▒ | ▓  ▒ ▓
| |▓▒▒▒| | |
1020 PRINT"   | ▓  ▒ ▓  ▒ | ▓  ▒ ▓
| |▓▒▒▒| | |
1030 PRINT"   | ▓  ▒ ▓  ▒ | ▓  ▒ ▓
| |▓▒▒▒| | |
1040 PRINT"   | ▓  ▒ ▓  ▒ | ▓  ▒ ▓
| |▓▒▒▒| | |
1050 PRINT"   | ▓E▒ ▓R▒ | ▓Y▒ ▓
|U|▓▒ | |
```

```
1060 PRINT"  |  ▓_▓ ▓_▓  |   ▓_▓ ▓
�_▌ ▓▓▓  |   |
1070 PRINT"  |   |   |   |   |   |   |   |
   |   |
1080 PRINT"  |   |   |   |   |   |   |   |
   |   |
1090 PRINT"  |   |   |   |   |   |   |   |
   |   |
1100 PRINT"  | S | D | F | G | H | J |
K | L |
1110 PRINT"    ▙__▙__▙__▙__▙__▙__▙__▟
__▙__▟
1120 PRINTLEFT$(AT$,20)SPC(5)"PRESS F1 T
O REPLAY THE TUNE"
1130 PRINTLEFT$(AT$,22)SPC(5)"PRESS F7 T
O START A NEW TUNE"
1150 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,33 :REM WAVEFORM
10090 RETURN
```

26

Anagram


```
TRIES: 4              SCORE: 3


              P
              U
              I
                 P
          L


      WHAT IS THE WORD?
```

If you **think** that you are good at spelling then this game is for you. If you **know** that you are bad at spelling then this game is certainly for you. Well, you need the practice don't you? A selection of letters will be scattered around in a box within the screen and the player will be asked to unjumble them to make a word. Not any old word like MAFILY will do however, when the *correct* word is FAMILY.

How to play

This is for one player.

The selection of letters will not be on one line but will be mixed up in a small square.

When you have decided what the correct word is you type it in and press RETURN.

Tries and correct answers will be shown on the screen but, in the event of a wrong answer the player will be asked to try again until the correct answer is given.

If you make a mistake press DELETE and begin again, but always remember to use CAPITAL letters when typing in your entry.

Programming Hints

More difficult words can be used by changing the data statements in lines 440 to 470. If you increase the number of words, change the 20 in lines 40, 70 and 100 to match the total number of words.

Program

```
10 REM ****************
20 REM *              *
22 REM *    ANAGRAM    *
24 REM *              *
25 REM ****************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 GOSUB10000
40 DIMW$(20):DIMM(6,6)
45 POKE53280,13:POKE53281,14:PRINTCHR$(1
44)
50 SC=0:TR=0:PRINTCHR$(147)
60 POKESQ+1,40:FORDL=1TO100:NEXTDL:POKES
Q+1,0
70 FORJ=1TO20
80 READW$(J)
90 NEXTJ
92 GOTO325
100 R=INT(RND(1)*20)+1
102 FORJ=7TO13
104 PRINTLEFT$(AT$,J)SPC(11);"
   "
106 NEXTJ
110 PRINTCHR$(144):FORJ=1TO6
120 IFMID$(W$(R),J,1)=""THENGOTO180
125 IFMID$(W$(R),J,1)=" "THENGOTO180
130 P1=INT(RND(1)*6)+1
140 P2=INT(RND(1)*6)+1
```

```
150 IFM(P1,P2)=1THENGOTO130
160 M(P1,P2)=1
170 PRINTLEFT$(AT$,P1+6)SPC(P2+14)MID$(W
$(R),J,1)
175 POKESO+1,20:FORDL=1TO40:NEXTDL:POKES
O+1,0
180 NEXTJ
185 PRINTCHR$(5)
190 PRINTLEFT$(AT$,16)SPC(9)" WHAT IS TH
E WORD? "
200 FORJ=1TO6
210 FORK=1TO6
220 M(J,K)=0
230 NEXTK
240 NEXTJ
250 PRINTLEFT$(AT$,18)SPC(12);:INPUTA$
252 IFA$>"Z" THENPRINTLEFT$(AT$,4)SPC(10
)"USE CAPITAL PLEASE":GOTO250
256 IFLEN(A$)<8THENA$=A$+" ":GOTO256
260 PRINTLEFT$(AT$,16)SPC(6)"
                                  "
265 PRINTLEFT$(AT$,18)SPC(6)"
                                  "
270 TR=TR+1
280 IFA$="QUIT    "THENGOTO420
290 IFLEFT$(A$,LEN(W$(R)))<>W$(R)THEN GO
TO390
300 FORTT=1TO10:FORSS=10TO100STEP5:POKES
O+1,SS:NEXTSS,TT:POKESO+1,0
310 PRINTLEFT$(AT$,16)SPC(13)"CORRECT!"
320 SC=SC+1
325 PRINTCHR$(144):PRINTLEFT$(AT$,1)SPC(
10)"A N A G R A M S "
330 PRINTCHR$(5):PRINTLEFT$(AT$,3)SPC(4)
"TRIES: ";TR
340 PRINTLEFT$(AT$,3)SPC(24)"SCORE: ";SC
342 FORDL=1TO500:NEXTDL
350 FORJ=6TO12
360 PRINTLEFT$(AT$,J)SPC(11);"
             "
370 NEXTJ
380 GOTO100
390 FORTT=1TO6:FORSS=100TO10STEP-2:POKES
O+1,SS:NEXTSS,TT:POKESO+1,0
400 PRINTLEFT$(AT$,16)SPC(14)"TRY AGAIN!
"
```

```
405 FORDL=1TO1000:NEXTDL
410 GOTO190
420 PRINTLEFT$(AT$,16)SPC(7);"THE WORD W
AS ";W$(R)
425 FORDL=1TO300:NEXTDL
428 PRINTLEFT$(AT$,16)SPC(6)"
                                         "
430 GOTO330
440 DATA "POND","WOOD","MOUSE","TIGER","
DIGIT"
450 DATA"IDEA","ANAGRAM","MOTH","PARTY",
"OCEAN"
460 DATA"PENNY","RABBIT","PEAR","TOAD","
GUESS"
470 DATA"BINARY","PUPIL","BASIC","VIDEO"
,"RECORD"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

27

Compass

This game, along with Morse Code and Constellation games' could save your life one day. You might wander off in a desert, a jungle or an ice field and you will thank your lucky stars that you once had a computer.

The Compass game will help you to identify North from South and even North East from South West.

How to play

Your friendly computer will draw you a map and show you the eight major compass settings North, North East, East, South East, South, South West, West and North West.

The computer will then spin its own little compass setting, point the arrow in a certain direction and ask you to decide where you are going.

Wrong answers mean that you will be asked again and again if necessary.

Random selection means that you may find yourself pointed in the same direction twice running but at least you should know where you are.

Programming Notes

This program uses the same map routine as 'towns' and 'counties'. If you are typing in one of these as well you can save yourself some work if you just type in the lines that are different with your first program still in the computer. Don't forget to save your first program on a tape.

Program

```
10 REM **************
20 REM *            *
22 REM *  COMPASS   *
24 REM *            *
25 REM **************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,6:POKE53281,15:PRINTCHR$(14
4)
40 TR=0:SC=0
100 GOSUB9000:GOSUB8000
110 FORR=1TO8
120 PRINTLEFT$(AT$,X(R))SPC(Y(R))A$(R)
125 PRINTLEFT$(AT$,5)SPC(30-(LEN(DI$(R))
/2))DI$(R)
130 FORDL=1TO1000:NEXTDL
140 GOSUB7000
150 NEXTR
155 R=INT(RND(1)*8)+1
160 PRINTLEFT$(AT$,4)SPC(20)"SCORE"SC
165 PRINTLEFT$(AT$,4)SPC(30)"TRIES"TR
170 PRINTLEFT$(AT$,X(R))SPC(Y(R))A$(R)
175 PRINTLEFT$(AT$,18)SPC(23)"
     "
180 PRINTLEFT$(AT$,18)SPC(23)"WHICH DIRE
CTION"
```

```
185 PRINTLEFT$(AT$,19)SPC(23)"
    "
190 PRINTLEFT$(AT$,19)SPC(23)"   IS THI
S ? "
192 PRINTLEFT$(AT$,21)SPC(23);"
      "
195 PRINTLEFT$(AT$,21)SPC(23);:INPUTANS$
200 TR=TR+1:IFANS$=DI$(R)THEN300
210 FORW=4TO1STEP-1:FORQ=1TO5:FORQQ=10TO
1STEP-1:POKESO+1,W*Q*QQ
215 NEXTQQ,Q,W:POKESO+1,0
220 PRINTLEFT$(AT$,21)SPC(23);"
      "
230 PRINTLEFT$(AT$,21)SPC(23);"NO!   TRY
AGAIN"
240 FORDL=1TO500:NEXTDL
250 GOTO160
300 PRINTLEFT$(AT$,21)SPC(23);"
         "
310 PRINTLEFT$(AT$,21)SPC(23);"   CORREC
T!      "
315 FORW=1TO10:FORQ=1TO4:FORQQ=1TO6:POKE
SO+1,W*Q*QQ:NEXTQQ,Q,W:POKESO+1,0
320 FORDL=1TO1000:NEXTDL
330 GOSUB7000
340 SC=SC+1
350 GOTO155
7000 REM CLEAR SCREEN
7010 FORT=5TO22:PRINTLEFT$(AT$,T)SPC(20)
"                       "
7020 NEXTT
7030 RETURN
8000 REM SET UP ARROWS
8010 READX:IFX=0THENGOTO8030
8020 A1$=A1$+CHR$(X):GOTO8010
8030 A2$=CHR$(180)+CHR$(170)+CHR$(17)+CH
R$(157)+CHR$(157)
8040 A2$=A2$+A2$+A2$+A2$
8050 A3$=CHR$(32)+CHR$(110)+CHR$(145)+CH
R$(157)+CHR$(157)+CHR$(110)
8060 A3$=A3$+A3$+A3$+A3$
8070 A4$=CHR$(32)+CHR$(109)+CHR$(17)+CHR
$(157)+CHR$(157)+CHR$(109)
8080 A4$=A4$+A4$+A4$+A4$
8090 A$(1)=CHR$(110)+CHR$(109)+CHR$(17)+
CHR$(157)+CHR$(157)+A2$
```

```
8100 A$(2)=A3$+CHR$(112)
8110 A$(3)=A1$+CHR$(110)+CHR$(145)+CHR$(
157)+CHR$(109)
8120 A$(4)=A4$+CHR$(186)
8130 A$(5)=A2$+CHR$(109)+CHR$(110)
8140 A$(6)=CHR$(108)+MID$(A3$,2)
8150 A$(7)=CHR$(110)+CHR$(17)+CHR$(157)+
CHR$(109)+CHR$(145)+A1$
8160 A$(8)=CHR$(207)+MID$(A4$,2)
8170 FORT=1TO8:READX:X(T)=X:NEXTT
8180 FORT=1TO8:READY:Y(T)=Y:NEXTT
8190 FORT=1TO8:READY$:DI$(T)=Y$:NEXTT
8200 SO=54272
8210 FORT=0TO28:POKESO+T,0:NEXTT
8220 POKESO+5,9:POKESO+6,240:POKESO+24,1
5:POKESO+4,33
8230 RETURN
9000 REM DRAW MAP
9005 PRINTCHR$(147)
9010 FORT=1024TO1944STEP40
9015 FORTT=0TO18
9020 READX
9030 POKET+TT,X:POKE(T+TT+54272),5
9040 NEXTTT,T
9050 RETURN
10000 DATA 32,32,32,32,32,32,32,32,252,9
8,98,32,32,32,32,32,32,32,32
10010 DATA32,32,32,32,32,254,32,32,160,1
60,236,32,32,32,32,32,32,32,32
10020 DATA32,32,32,32,32,126,32,254,160,
236,32,32,32,32,32,32,32,32
10030 DATA32,32,32,32,58,118,108,160,160
,160,98,160,160,252,32,32,32,32,32
10040 DATA32,32,32,32,58,124,108,160,160
,160,160,160,160,126,32,32,32,32,32
10050 DATA32,32,32,32,46,32,160,160,160,
160,160,160,160,32,32,32,32,32,32
10060 DATA32,32,32,32,32,108,108,160,160
,160,160,160,126,32,32,32,32,32
10070 DATA32,32,32,32,32,32,245,160,160,
160,160,120,126,32,32,32,32,32,32
10080 DATA32,32,32,32,32,126,244,118,160
,160,160,160,252,32,32,32,32,32,32
10090 DATA32,32,32,32,32,32,126,254,160,
160,160,160,160,97,32,32,32,32,32
10100 DATA32,32,32,32,32,32,32,160,160,1
```

```
60,160,160,160,252,32,32,32,32,32
10110 DATA32,32,32,32,32,32,32,126,119,2
54,160,160,160,160,121,32,32,32,32
10120 DATA32,32,32,32,32,32,32,255,32,11
8,160,160,160,160,160,123,32,32,32
10130 DATA32,32,32,32,32,32,32,32,32,32,
254,160,160,160,160,160,32,32,32
10140 DATA32,32,32,32,32,32,32,32,32,32,
160,160,160,160,160,223,32,32,32
10150 DATA32,32,32,32,32,32,32,126,248,2
54,160,160,160,160,160,160,223,32,32
10160 DATA32,32,32,32,32,32,32,226,160,1
60,160,160,160,160,160,160,252,98,123
10170 DATA32,32,32,32,32,32,32,32,160,16
0,160,160,160,160,160,160,160,160,160
10180 DATA32,32,32,32,32,32,108,254,160,
160,160,160,160,160,160,160,160,160,236
10190 DATA32,32,32,32,32,124,236,251,160
,160,160,160,160,160,160,160,160,160,32
10200 DATA32,32,32,32,32,32,32,32,124,12
0,160,160,160,160,160,192,192,98,123
10210 DATA32,32,32,32,32,32,32,254,247,2
54,160,160,160,160,160,160,160,160,126
10220 DATA32,32,32,32,32,32,108,160,160,
160,160,160,160,120,239,120,226,32,32
10230 DATA32,32,32,32,46,254,239,251,236
,32,32,99,32,32,32,32,32,32,32
10240 DATA183,183,183,183,17,157,157,157
,157,175,175,175,175,0
10250 DATA 10,14,12,11,11,15,12,10
10260 DATA 29,28,29,28,29,27,27,27
10270 DATA"NORTH","NORTH-EAST","EAST","S
OUTH-EAST"
10280 DATA"SOUTH","SOUTH-WEST","WEST","N
ORTH-WEST"
```

28

Submarine
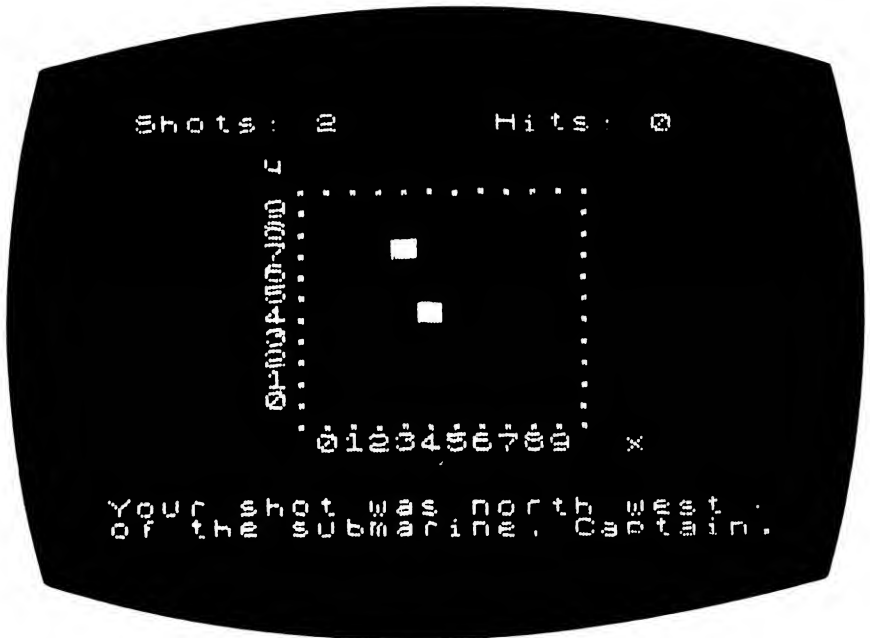
You are a destroyer captain alone in a hostile sea surrounded by a pack of submarines which are travelling secretly to a rendezvous. The submarines cannot break radio silence or send for help and must not attack you for fear of giving their position away but you can sink as many of them as you can - with as few depth charges as possible.

How to play

On the screen will be shown a board divided into 100 squares. The submarine is hiding in one of those squares. The bottom (horizontal) line is called X and the upright (perpendicular) line is called Y.

Each line of boxes goes from 0 to 9 and you have to give the box numbers to the computer when it asks for your entry. You will be asked to type in a number for the X and Y lines. If you think that

the submarine is in a box 8 across and 5 high then press 8 and 5 when the X and Y positions are asked for.

Remember there is no need to press RETURN after each number.

After the second number is entered you will hear the 'crump' of an exploding depth charge. If you make a direct hit first time you will hear a 'whooping' sound and the screen will show you how many tries you took to sink the submarine.

If however you miss, the computer will tell you if your shot was North, South, East or West of the target and you must then plan your next shot.

As soon as the submarine is sunk your computer will search and detect another target.

Special Note Expert captains should be able to detect and sink the enemy within four moves.

Program

```
10 REM ********************
20 REM *                  *
22 REM *    SUBMARINE      *
24 REM *                  *
25 REM ********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147);CHR$(144):GOSUB10000
35 POKE53280,6:POKE53281,1
40 POKESO+1,12:FORDL=1TO300:NEXTDL:POKES
O+1,0
50 PRINTLEFT$(AT$,1)SPC(6)"SHOOTS: 0"
60 PRINTLEFT$(AT$,1)SPC(23)"HITS:  0"
70 PRINTLEFT$(AT$,2)SPC(11)"Y"
80 PRINTLEFT$(AT$,15)SPC(25)"X"
90 FORJ=10TO19
100 PRINTLEFT$(AT$,3)SPC(J+3)"."
110 PRINTLEFT$(AT$,14)SPC(J+3)"."
120 PRINTLEFT$(AT$,15)SPC(J+3)MID$(STR$(
J-10),2,1)
130 NEXTJ
```

```
140 FORJ=3TO14
150 PRINTLEFT$(AT$,J)SPC(12)"."
160 PRINTLEFT$(AT$,J)SPC(23)"."
170 NEXTJ
180 FORJ=4TO13
190 PRINTLEFT$(AT$,J)SPC(11)MID$(STR$(13
-J),2,1)
200 SH=0:HT=0
205 AX=0:AY=0
210 NEXTJ
220 SY=INT(RND(1)*10)
230 SX=INT(RND(1)*10)
232 PRINTLEFT$(AT$,17)SPC(9);"
            ";
235 PRINTLEFT$(AT$,17)SPC(9);"YOUR SHOT
(X,Y) ? ";
237 GETAX$:IFAX$<"0" OR AX$>"9" THEN237
240 PRINTAX$",";:AX=VAL(AX$)
242 GETAY$:IFAY$<"0" OR AX$>"9" THEN242
244 PRINTAY$:AY=VAL(AY$)
245 PRINTLEFT$(AT$,13-AY)SPC(13+AX)"*"
260 FORJ=100TO30STEP-1:POKESO+1,10+J:FOR
DL=1TO10:NEXTDL,J:POKESO+1,0
270 POKESO+4,129:FORJ=1TO30:POKESO+1,J:F
ORDL=1TO10:NEXTDL
275 NEXTJ:POKESO+1,0:POKESO+4,17
290 PRINTLEFT$(AT$,20)SPC(7)"
                            "
295 PRINTLEFT$(AT$,21)SPC(7)"
                            "
300 PRINTLEFT$(AT$,20)SPC(7);
310 IFAX=SX AND AY=SY THENGOTO420
320 PRINT"YOUR SHOT WAS ";
330 IF AY<SY THENPRINT"SOUTH ";
340 IFAY>SY THENPRINT"NORTH ";
350 IFAX<SXTHENPRINT"WEST ";
360 IFAX>SXTHENPRINT"EAST ";
370 PRINTLEFT$(AT$,21)SPC(7)"OF THE SUBM
ARINE,CAPTAIN."
380 SH=SH+1
390 PRINTLEFT$(AT$,1)SPC(13)SH;CHR$(157)
;"     "
400 FORDL=1TO200:NEXTDL
410 GOTO232
420 FORJ=1TO40
425 PRINTLEFT$(AT$,13-AY)SPC(13+AX)"  "
```

```
430 POKESO+1,J:POKESO+8,100-J
435 PRINTLEFT$(AT$,13-AY)SPC(13+AX);CHR$
(113)
437 POKESO+8,J:POKESO+1,100-J
440 NEXTJ:POKESO+1,0:POKESO+8,0
450 PRINTLEFT$(AT$,20)SPC(12)"A DIRECT H
IT!"
452 FORDL=1TO1000:NEXTDL
453 FORJ=4TO13
454 PRINTLEFT$(AT$,J)SPC(12);".
   ."
456 NEXTJ
460 HT=HT+1
470 PRINTLEFT$(AT$,1)SPC(29)HT;CHR$(157)
;"   "
472 IFHT=10THENGOTO540
480 FORDL=1TO300:NEXTDL
490 PRINTLEFT$(AT$,20)SPC(2)"ANOTHER SUB
MARINE HAS BEEN DETECTED!"
510 GOTO220
540 FORJ=1 TO 10
550 :
560 NEXTJ
562 PRINTCHR$(147)
570 PRINTLEFT$(AT$,8)SPC(11);"CONGRATULA
TIONS!"
580 PRINTLEFT$(AT$,10)SPC(9);"TEN SUBMAR
INES SUNK!"
590 PRINTLEFT$(AT$,13)SPC(12);"YOU HAVE
BEEN "
600 PRINTLEFT$(AT$,14)SPC(9);"PROMOTED T
O ADMIRAL!"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :POKESO+12,9:REM  ATTAC
K/DECAY
10050 POKESO+6,240:POKESO+13,240:REM SUS
TAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :POKESO+11,129:REM WAV
EFORM
10080 RETURN
```

29

Word Search
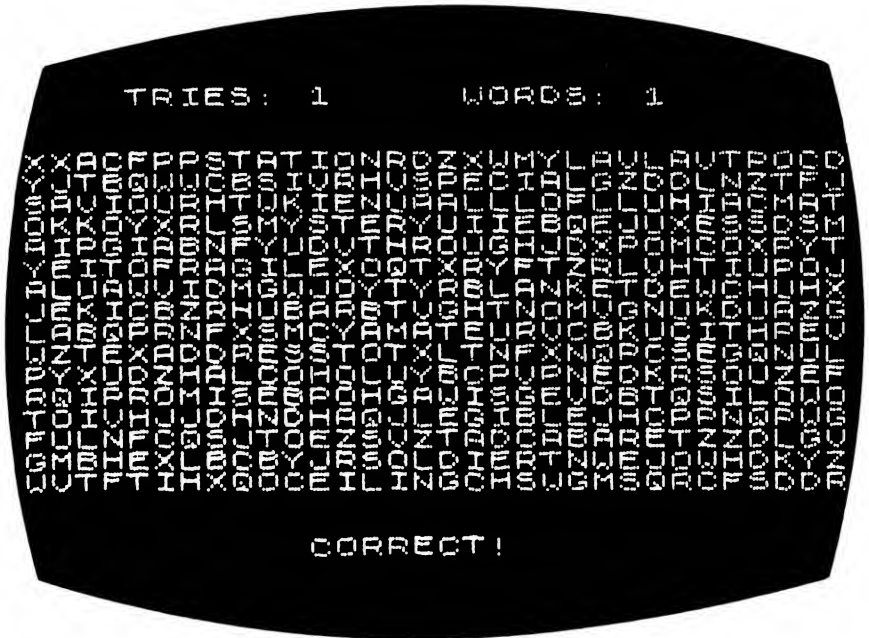
This is a game to see how sharp your eyesight is and how quick you are at spelling words which are hidden in the screen.

The computer will put up a selection of letters all over the screen and, hidden amongst this alphabet spaghetti will be certain words which you will have to spot and spell out to your computer.

How to play

When you find a word on the screen you type it in. You then press the RETURN key and, if you have correctly identified and spelled out the word, it will be picked out, in green, on your screen.

The score board will show your number of tries and the number of words you have correctly spotted.

When you cannot find any more words you simply type in the word
QUIT.

Your computer will then show, in blue, all the words.

Your score will be shown on the screen.

Programming Hints

If the selection of words is too simple or difficult you can change
the data in lines 500 to 530. Make sure that all the words you use
have exactly 7 letters.

Program

```
10 REM ********************
20 REM *                  *
22 REM *    WORD SEARCH    *
24 REM *                  *
25 REM ********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147);CHR$(150)
35 POKE53280,0:POKE53281,0
40 DIMM(20)
47 DIMB(17)
50 DIMW$(20)
52 DIMC$(20)
55 SC=0:TR=0
60 FORJ=1TO20
70 READW$(J)
80 NEXTJ
90 PRINTLEFT$(AT$,3)SPC(4);
100 FORK=1TO16
105 PRINTLEFT$(AT$,3+K)SPC(4);
110 R1=INT(RND(1)*20)+1
115 IFM(R1)=1THENGOTO110
117 M(R1)=1
119 C$(K)=W$(R1)
120 R2=INT(RND(1)*20)+1
125 B(K)=R2-1
130 FORL=1TO32
140 IFL=R2THENPRINTC$(K);:L=L+7
```

```
150 LT=INT(RND(1)*26)+65
160 PRINTCHR$(LT);
170 NEXTL
180 PRINT
190 NEXTK
195 PRINTLEFT$(AT$,21)SPC(11)"
                                "
197 PRINTLEFT$(AT$,21)SPC(11);
200 PRINTCHR$(5);:INPUT"YOUR WORD";A$
202 IF A$="QUIT"THEN GOTO400
204 IFA$<"A"AND A$>"Z"THENPRINTLEFT$(AT$
,20)SPC(4)"USE CAPITALS,PLEASE":GOTO195
205 TR=TR+1
207 PRINTLEFT$(AT$,21)SPC(11);"
                          "
210 FORJ=1TO16
220 IFA$=C$(J)THENGOTO270
230 NEXTJ
240 :
250 PRINTLEFT$(AT$,23)SPC(16)"WRONG!"
255 FORDL=1TO1000:NEXTDL
257 PRINTLEFT$(AT$,23)SPC(16)"         "
260 GOTO300
270 :
275 PRINTCHR$(30):PRINTLEFT$(AT$,J+3)SPC
(B(J)+4);C$(J)
280 PRINTCHR$(5):PRINTLEFT$(AT$,23)SPC(1
1)"CORRECT!"
282 C$(J)="":FORDL=1TO1000:NEXTDL
285 PRINTCHR$(5):PRINTLEFT$(AT$,23)SPC(1
1)"          "
290 SC=SC+1
300 PRINTLEFT$(AT$,1)SPC(7)"TRIES: ";TR
310 PRINTLEFT$(AT$,1)SPC(23)"WORDS: ";SC
320 IFSC<>16 THENGOTO195
330 END
400 FORJ=1TO16
405 PRINTCHR$(154)
410 PRINTLEFT$(AT$,J+3)SPC(B(J)+4);C$(J)
420 NEXTJ
430 GOTO330
500 DATA"PROMISE","SPECIAL","BLANKET","F
RAGILE","THROUGH"
510 DATA"ADDRESS","CEILING","AMATEUR","M
YSTERY","LEGIBLE"
```

```
520 DATA"BELIEVE","STATION","RHUBARB","D
ISSECT","SAVIOUR"
530 DATA"ALCOHOL","CUSHION","SOLDIER","C
ABARET","AQUATIC"
```

30

Noughts and Crosses
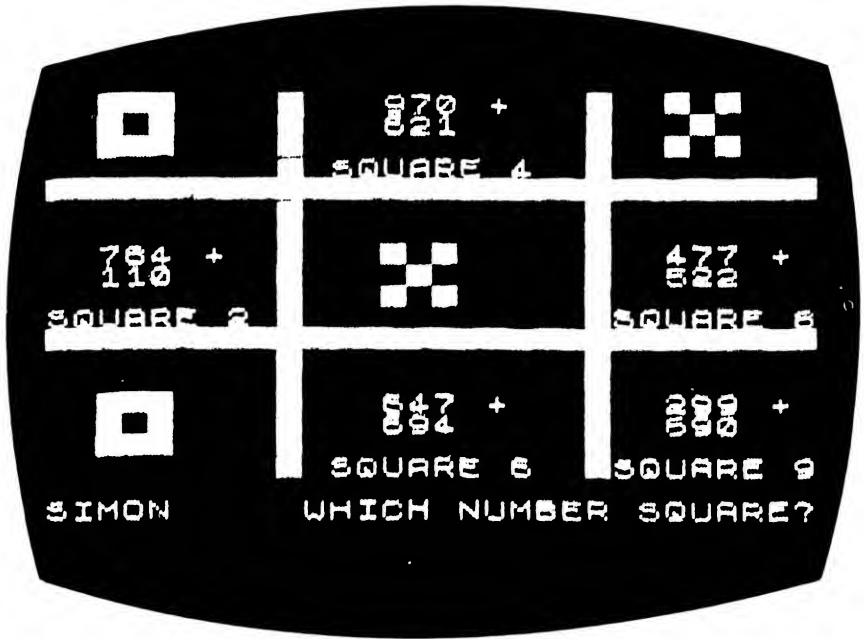
No, it's not that same old boring game that you play when it's raining outside and there is nothing else to do.

With our noughts and crosses you have to solve a problem **before** you can make your mark on your computer's board. You will have to decide if you can answer the question before you choose your box.

How to play

The computer will ask for the players names which you type in and enter by pressing the RETURN key.

The computer will then present you with a board and in each of the nine squares you will find a maths sum to solve.

First choose the box you want and RETURN the number.

Now you can type in your answer and see if you get your nought or cross for the correct answer.

Your opponent must follow the same steps.

If either player gives a wrong answer the computer moves to the opposing player's turn.

The game progresses until someone gets a winning line at which point you can press caps shift and space together, then RUN to play again.

If no one can complete a winning line then the game can proceed until all the boxes are completed and the player with the highest number of noughts or crosses will be the winner.

Programming Note

You can make the sums easier by reducing the numbers in line 200 or more difficult by typing in a larger number.

Program

```
10 REM *********************
20 REM *                   *
22 REM * NOUGHTS & CROSSES *
24 REM *                   *
25 REM *********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147);CHR$(144):GOSUB10000
35 POKE53280,9:POKE53281,9
40 DIMN(18)
42 DIMP$(2)
44 DIMH(9)
50 PRINTLEFT$(AT$,10)SPC(2);"WHAT ARE TH
E PLAYERS NAMES?"
60 INPUT"PLAYER ONE: ";P$(1)
70 INPUT"PLAYER TWO: ";P$(2)
80 PRINTCHR$(147)
```

```
110 FORJ=2TO19
120 PRINTLEFT$(AT$,J)SPC(11);CHR$(113)
130 PRINTLEFT$(AT$,J)SPC(23);CHR$(113)
140 NEXTJ
150 FORJ=2TO31
160 PRINTLEFT$(AT$,7)SPC(J);CHR$(113)
170 PRINTLEFT$(AT$,14)SPC(J);CHR$(113)
180 NEXTJ
190 FORJ=1TO18
200 N(J)=INT(RND(1)*900)+100
210 NEXTJ
220 C=1
230 FORJ=4 TO 26STEP11
240 FORK=2TO16STEP7
250 PRINTLEFT$(AT$,K)SPC(J);N(C)
260 C=C+1
270 PRINTLEFT$(AT$,K+1)SPC(J);N(C)
280 C=C+1
290 PRINTLEFT$(AT$,K)SPC(J+4);"+"
300 PRINTLEFT$(AT$,K+3)SPC(J-2);"SQUARE"
;INT(C/2)
310 NEXTK
320 NEXTJ
324 FORN=1TO2
330 PRINTLEFT$(AT$,21)SPC(0)P$(N);", WHI
CH NUMBER SQUARE?"
332 PRINTLEFT$(AT$,22)SPC(0)"
                              "
335 PRINTLEFT$(AT$,22)SPC(0);
340 INPUTSQ
341 IFSQ<1ORSQ>9THENGOTO330
342 PRINTLEFT$(AT$,21)SPC(0)"SQUARE "SQ"
                              "
345 PRINTLEFT$(AT$,22)SPC(0)"
                              "
347 PRINTLEFT$(AT$,22)SPC(0);
350 INPUT"WHAT IS THE ANSWER? ";ANS
360 IFANS=N(SQ*2)+N(SQ*2-1)THENGOTO420
370 POKESO+1,20:FORDL=1TO100:NEXTDL:POKE
SO+1,0
400 GOTO620
420 H(SQ)=1
422 POKESO+1,30:FORDL=1TO50:NEXTDL:POKES
O+1,0
430 IFSQ>0ANDSQ<4THENW=2:V=SQ*7-5
440 IFSQ>3ANDSQ<7THENW=13:V=(SQ-3)*7-5
```

```
450 IFSQ>6ANDSQ<10THENW=24:V=(SQ-6)*7-5
460 FORJ=0TO3
470 PRINTLEFT$(AT$,J+V)SPC(W);"            "
480 NEXTJ
490 IFN=2THENGOTO560
500 PRINTLEFT$(AT$,V+0)SPC(W+3);CHR$(156
);"@ @"
510 PRINTLEFT$(AT$,V+1)SPC(W+3);" @ "
520 PRINTLEFT$(AT$,V+2)SPC(W+3);"@ @";CH
R$(144)
550 GOTO620
560 PRINTLEFT$(AT$,V+0)SPC(W+3);CHR$(5);
"@@@"
580 PRINTLEFT$(AT$,V+1)SPC(W+3);"@ @"
600 PRINTLEFT$(AT$,V+2)SPC(W+3);"@@@";CH
R$(144)
620 NEXTN
630 HH=0:FORJ=1TO9
640 IFH(J)=0THENHH=1
650 NEXTJ
655 IFHH=1THENGOTO324
660 END
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

31

Towns

Would you believe that there are people living in this country who don't know where they are - on a map? Now we are sure that clever young readers of this book will have a good idea of where they live but will they know where other people live?

To find out we have devised this game to help you find out where the major cities in England, Scotland and Wales are to be found.

How to play

The computer will draw a map for you and give you eighteen towns to choose from.

The computer will then choose, at random, a town for you to identify. A bright dot will indicate the town in question.

Tries and scores are shown on the screen.

If you are wrong it will be a case of trying until you get it right. After all, it pays to know where you are - doesn't it?

Programming Notes

This program uses the same map drawing routine as 'counties' and 'compass'. If you are typing in all of them you will save yourself some work if you just type in the lines that are different with your first program still in the computer. Don't forget to save your first program onto a tape.

Program

```
10 REM *************
20 REM *           *
22 REM *   TOWNS   *
24 REM *           *
25 REM *************
27 DIMSX(18),SY(18),TWN$(18)
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
35 POKE53280,6:POKE53281,15:PRINTCHR$(14
4)
40 TR=0:SC=0
50 GOSUB9000:GOSUB7000
60 FORT=1TO18
70 POKESP+21,0:POKESP,SX(T):POKESP+1,SY(
T):POKESP+21,1
75 PRINTLEFT$(AT$,10)SPC(23)"
      "
80 PRINTLEFT$(AT$,10)SPC(23)TWN$(T)
90 FORQ=1TO15:FORDL=1TO50:NEXTDL:POKESP+
21,0:FORDL=1TO50:NEXTDL:POKESP+21,1:NEXT
100 NEXTT
110 R=INT(RND(1)*18)+1
120 PRINTLEFT$(AT$,3)SPC(20)"SCORE:"SC
130 PRINTLEFT$(AT$,3)SPC(30)"TRIES:"TR
135 PRINTLEFT$(AT$,10)SPC(23)"
      "
140 PRINTLEFT$(AT$,10)SPC(23)"WHICH  TOW
N "
```

```
145 PRINTLEFT$(AT$,12)SPC(23)"
     "
150 PRINTLEFT$(AT$,12)SPC(23)"IS THIS ?"
155 PRINTLEFT$(AT$,14)SPC(23)"
     "
157 POKESP,SX(R):POKESP+1,SY(R)
160 PRINTLEFT$(AT$,14)SPC(23);:INPUTANS$
165 IFASC(ANS$)<65 ORASC(ANS$)>90THENANS
$=MID$(ANS$,2):GOTO165
170 TR=TR+1
180 IFANS$=TWN$(R)THENGOTO240
190 :
200 GOSUB5000:PRINTLEFT$(AT$,12)SPC(22)"
NO! THAT IS WRONG"
210 FORDL=1TO100:POKESO+1,RND(1)*256:NEX
TDL:POKESO+1,0
220 POKESO+1,0:GOSUB5000
230 GOTO120
240 GOSUB5000:PRINTLEFT$(AT$,12)SPC(22)"
     CORRECT!       "
250 FORA=1TO4:FORB=1TO2:FORC=1TO5:FORD=1
TO6:POKESO+1,A*B*C*D:NEXTD,C,B,A
260 SC=SC+1
270 POKESO+1,0:GOSUB5000
280 GOTO110
5000 REM CLEAR PART OF THE SCREEN
5010 FORT=5TO23:PRINTLEFT$(AT$,T)SPC(20)
"                    ":NEXTT:RETURN
7000 REM SET UP SPRITE
7010 SP=53248
7020 POKESP+21,0
7030 FORT=0TO63:POKE832+T,0:NEXTT
7040 POKE832,96:POKE835,240:POKE838,240:
POKE841,96
7050 POKE2040,13:POKESP+21,1:POKESP+16,0
:POKESP+39,0
7060 FORT=1TO18:READSX(T),SY(T),TWN$(T):
NEXTT
7070 REM SET UP SOUNDS
7080 SO=54272:FORT=0TO28:POKESO+T,0:NEXT
T
7090 POKESO+5,9:POKESO+6,240:POKESO+24,1
5:POKESO+4,33
7100 RETURN
9000 REM DRAW MAP
9005 PRINTCHR$(147)
9010 FORT=1024TO1944STEP40
```
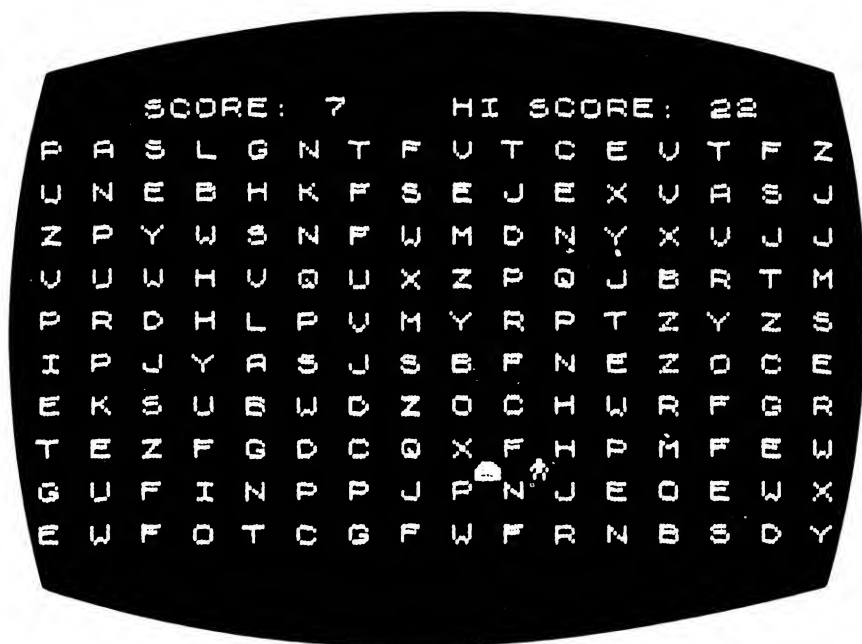
```
9015 FORTT=0TO18
9020 READX
9030 POKET+TT,X:POKE(T+TT+54272),5
9040 NEXTTT,T
9050 RETURN
10000 DATA 32,32,32,32,32,32,32,32,252,9
8,98,32,32,32,32,32,32,32,32
10010 DATA32,32,32,32,32,254,32,32,160,1
60,236,32,32,32,32,32,32,32,32
10020 DATA32,32,32,32,32,126,32,254,160,
236,32,32,32,32,32,32,32,32
10030 DATA32,32,32,32,58,118,108,160,160
,160,98,160,160,252,32,32,32,32,32
10040 DATA32,32,32,32,58,124,108,160,160
,160,160,160,160,126,32,32,32,32,32
10050 DATA32,32,32,32,46,32,160,160,160,
160,160,160,160,32,32,32,32,32,32
10060 DATA32,32,32,32,32,108,108,160,160
,160,160,160,126,32,32,32,32,32,32
10070 DATA32,32,32,32,32,32,245,160,160,
160,160,120,126,32,32,32,32,32,32
10080 DATA32,32,32,32,32,126,244,118,160
,160,160,160,252,32,32,32,32,32,32
10090 DATA32,32,32,32,32,32,126,254,160,
160,160,160,160,97,32,32,32,32,32
10100 DATA32,32,32,32,32,32,32,160,160,1
60,160,160,160,252,32,32,32,32,32
10110 DATA32,32,32,32,32,32,32,126,119,2
54,160,160,160,160,121,32,32,32,32
10120 DATA32,32,32,32,32,32,32,255,32,11
8,160,160,160,160,160,123,32,32,32
10130 DATA32,32,32,32,32,32,32,32,32,32,
254,160,160,160,160,160,32,32,32
10140 DATA32,32,32,32,32,32,32,32,32,32,
160,160,160,160,160,223,32,32,32
10150 DATA32,32,32,32,32,32,32,126,248,2
54,160,160,160,160,160,160,223,32,32
10160 DATA32,32,32,32,32,32,32,226,160,1
60,160,160,160,160,160,160,252,98,123
10170 DATA32,32,32,32,32,32,32,32,160,16
0,160,160,160,160,160,160,160,160,160
10180 DATA32,32,32,32,32,32,108,254,160,
160,160,160,160,160,160,160,160,236
10190 DATA32,32,32,32,32,124,236,251,160
,160,160,160,160,160,160,160,160,160,32
10200 DATA32,32,32,32,32,32,32,32,124,12
0,160,160,160,160,160,192,192,98,123
```

```
10210 DATA32,32,32,32,32,32,32,254,247,2
54,160,160,160,160,160,160,160,160,126
10220 DATA32,32,32,32,32,32,108,160,160,
160,160,160,160,120,239,120,226,32,32
10230 DATA32,32,32,32,32,254,239,251,236
,32,32,99,32,32,32,32,32,32,32
10240 DATA149,225,"BRIGHTON"
10250 DATA108,213,"BRISTOL"
10260 DATA96,211,"CARDIFF"
10270 DATA124,192,"COVENTRY"
10280 DATA142,159,"HULL"
10290 DATA127,157,"LEEDS"
10300 DATA103,169,"LIVERPOOL"
10310 DATA147,212,"LONDON"
10320 DATA129,133,"NEWCASTLE"
10330 DATA85,236,"PLYMOUTH"
10340 DATA124,85,"ABERDEEN"
10350 DATA84,122,"AYR"
10360 DATA117,101,"DUNDEE"
10370 DATA111,112,"EDINBURGH"
10380 DATA95,113,"GLASGOW"
10390 DATA103,78,"INVERNESS"
10400 DATA98,107,"STIRLING"
10410 DATA100,54,"THURSO"
```

32

Vowel Chase


```
SCORE:  7        HI SCORE:  22
P  A  S  L  G  N  T  F  U  T  C  E  U  T  F  Z
U  N  E  B  H  K  F  S  E  J  E  X  U  A  S  J
Z  P  Y  W  S  N  F  W  M  D  N  Y  X  U  J  J
U  U  W  H  U  Q  U  X  Z  P  Q  J  B  R  T  M
P  R  D  H  L  P  U  M  Y  R  P  T  Z  Y  Z  S
I  P  J  Y  A  S  J  S  B  F  N  E  Z  O  C  E
E  K  S  U  B  W  D  Z  O  C  H  W  R  F  G  R
T  E  Z  F  G  D  C  Q  X  F  H  P  M  F  E  W
G  U  F  I  N  P  P  J  P  N  J  E  O  E  W  X
E  W  F  O  T  C  G  F  W  F  R  N  B  S  D  Y
```

You may have heard of voles and owls but we'll wager you haven't been on a vowel chase before.

You'll find yourself in the form of a little man running around an alphabetic maze collecting points for each vowel (A, E, I, O, U) which you munch.

But beware, there is a maze keeper out to munch you.

How to play

Your tiny figure can be moved up and down using keys Q and A. For left and right use O and P respectively. Every time you munch a vowel you get one point and the space is filled in by your computer with a consonant, or even another vowel.

If you get all the vowels from the screen before you are caught you get 10 bonus points.

However, you also lose one point for every consonant you eat so try and stick to the maze corridors or you could wind up with a minus score.

As soon as the game is completed, or you have been munched up by the mazekeeper, your computer will ask you if you want to play again in which case you press Y or N for yes or no and press RETURN. The only advantage you have over the maze keeper is that you can run through the letters, which will cost you minus points, but the maze keeper must keep to the aisles.

If the maze keeper gets you and the game ends the screen will light up all the vowels you have missed.

Program

```
10 REM ********************
20 REM *                  *
22 REM * VOWEL CHASE      *
24 REM *                  *
25 REM ********************
27 POKE52,48:POKE56,48:CLR
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147):GOSUB7000
35 POKE53280,8:POKE53281,10:PRINTCHR$(14
4)
110 SC=0:GOSUB10000
112 PRINTLEFT$(AT$,1)SPC(21);"HI SCORE:
";HS
120 PRINTLEFT$(AT$,1)SPC(4);"SCORE: ";SC
130 PR=17
140 RP=17
150 PC=15
160 CP=15
170 GR=5
180 RG=5
190 GC=15
200 CG=15
206 FF=0
210 PRINTCHR$(144):FORJ=4TO22STEP2
```

```
220 FORK=4T034STEP2
230 PRINTLEFT$(AT$,J)SPC(K)CHR$(INT(RND(
1)*26)+65)
235 NEXTK,J
240 PRINTCHR$(30):FORJ=3T023
242 PRINTLEFT$(AT$,J)SPC(3)CHR$(18);" ";
244 PRINTLEFT$(AT$,J)SPC(35)CHR$(18);" "
;
245 NEXTJ
246 FORJ=3T035
247 PRINTLEFT$(AT$,3)SPC(J)CHR$(18);" ";
248 PRINTLEFT$(AT$,23)SPC(J)CHR$(18);" "
;
250 NEXTJ:PRINTCHR$(5)
260 PRINTLEFT$(AT$,PR)SPC(PC);CHR$(35)
270 GOTO970
300 A=PEEK(197)
310 IFA=62 AND PR>4THENPR=PR-1
320 IFA=10 ANDPR<22THENPR=PR+1
330 IFA=38 ANDPC>4 THENPC=PC-1
340 IFA=41 ANDPC<34 THENPC=PC+1
350 IFPC=CP ANDPR=RP THENGOTO530
360 G=PEEK(984+PC+40*PR):IFG<32THENG=G+6
4
362 G$=CHR$(G)
364 IFG$=""ORG$=" "THENGOTO410
370 IFG$="A" ORG$="E"ORG$="I"ORG$="O"ORG
$="U" THENGOTO430
390 SC=SC-1
400 POKESO+1,5:FORDL=1T030:NEXTDL:POKESO
+1,0
410 GOTO450
420 IFPEEK(984+PC+40*PR)=36 THENGOTO800
424 GOTO450
430 POKESO+1,25:FORDL=1T030:NEXTDL:POKES
O+1,0
440 SC=SC+1
450 PRINTLEFT$(AT$,PR)SPC(PC);CHR$(5);CH
R$(35)
460 IFRP/2=INT(RP/2) ANDCP/2=INT(CP/2)TH
ENGOTO1100
480 PRINTLEFT$(AT$,RP)SPC(CP);" "
490 RP=PR
500 CP=PC
510 PRINTLEFT$(AT$,1)SPC(10);" ";SC;CHR$
(157);" "
```

```
530 RETURN
600 IFGR>PRTHENGR=GR-1:GOTO650
610 IFGR<PRTHENGR=GR+1:GOTO650
620 IFGC>PCTHENGC=GC-1:GOTO650
630 IFGC<PCTHENGC=GC+1:GOTO650
640 GR=GR+INT(RND(1)*3)-1:GC=GC+INT(RND(
1)*3)-1
650 IFPEEK(984+GC+40*GR)=35 THENGOTO800
652 G1=INT(RND(1)*3)-1:G2=INT(RND(1)*3)-
1
654 IFGR/2=INT(GR/2)ANDGC/2=INT(GC/2)THE
NGR=GR+G1:GC=GC+G2
660 IFGR/2=INT(GR/2)ANDGC/2=INT(GC/2)THE
NGR=RG:GC=CG:GOTO720
670 PRINTLEFT$(AT$,RG)SPC(CG);" "
680 PRINTLEFT$(AT$,GR)SPC(GC);CHR$(31);C
HR$(36)
690 RG=GR
700 CG=GC
720 RETURN
800 PRINTLEFT$(AT$,RG)SPC(CG);" "
810 PRINTLEFT$(AT$,RP)SPC(CP);" "
820 FORJ=1TO10
830 PRINTLEFT$(AT$,GR)SPC(GC);CHR$(5);CH
R$(35)
840 FORDL=10TO20:POKESO+1,DL*J:NEXTDL
850 PRINTLEFT$(AT$,GR)SPC(GC);CHR$(31);C
HR$(36)
852 NEXTJ:POKESO+1,0
854 FORJ=4TO22STEP2
856 FORK=4TO34STEP2
858 S=PEEK(984+K+40*J):IFS<32THENS=S+64
859 S$=CHR$(S)
860 IFS$="A"ORS$="E"ORS$="I"ORS$="O"ORS$
="U"THENGOSUB1200
862 NEXTK
864 NEXTJ
865 IF FF=1THENGOTO878
866 PRINTLEFT$(AT$,10)SPC(8);CHR$(144);"
BONUS 10 POINTS"
868 :
870 :
872 SC=SC+10
874 PRINTLEFT$(AT$,1)SPC(10);" ";SC;CHR$
(157);"  "
878 PRINTLEFT$(AT$,24)SPC(10);CHR$(144);
```

```
879 WAIT197,64:POKE198,0:INPUT"PLAY AGAI
N ";Q$
880 IFLEFT$(Q$,1)="N"THENGOTO1000
906 IFSC>HSTHENHS=SC
910 PRINTCHR$(147)
920 GOTO110
970 GOSUB300
980 GOSUB600
984 GOSUB300
990 GOTO970
1000 PRINTCHR$(147):END
1100 PRINTLEFT$(AT$,RP)SPC(CP);CHR$(144)
;CHR$(INT(RND(1)*26)+65):GOTO490
1200 FF=1:PRINTCHR$(28):PRINTLEFT$(AT$,J
)SPC(K);S$:RETURN
7000 REM *** READ IN GRAPHIC DATA ***
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
34)OR1
7060 FORI=0TO15:READA:POKE12568+I,A:NEXT
I
7070 POKE53272,(PEEK(53272)AND240)+12
7080 RETURN
7090 DATA24,24,60,90,24,36,36,102,0,60,1
26,219,255,195,255,170
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

33

Parachute
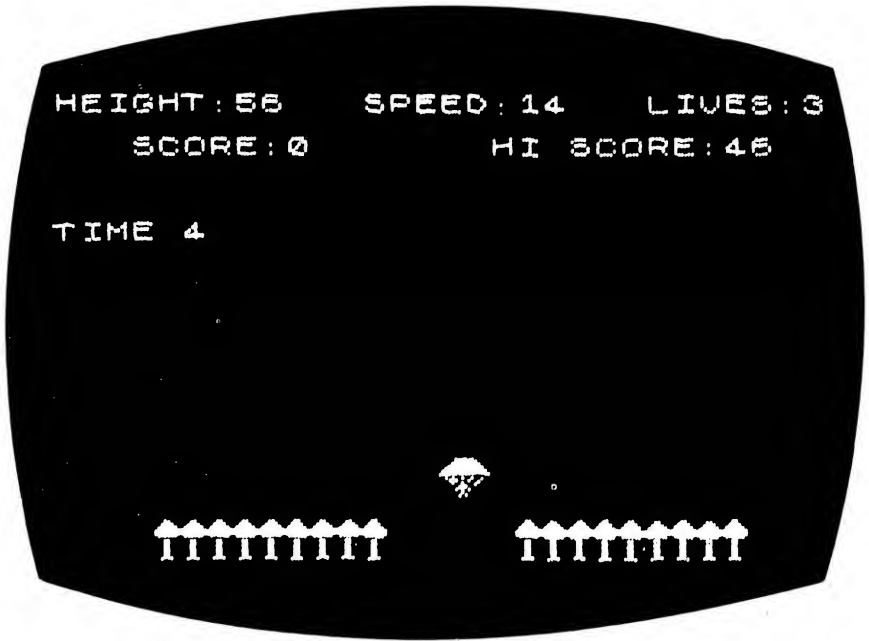
Quick, quick, there is a plane crew parachuting down from a damaged airliner into a pine forest and the pilot's parachute hasn't opened - only you can save him from crashing into the ground.

How to play

At the top of the screen you will see the height and the speed of the pilot's descent. To open the parachute you must divide the height by the speed to find out how long it will take for the pilot to land. If your answer is correct the parachute will open and your pilot will float gently to the ground.

Your crew have three lives between them so try and keep them alive as long as you can.

The sooner you get the answer and type it in and press RETURN the earlier the parachute will open and the more points you will receive.

Programming Hints

You can make the game easier by reducing the numbers in lines 210 and 220.

Program

```
10 REM *********************
20 REM *                   *
22 REM *     PARACHUTE      *
24 REM *                   *
25 REM *********************
30 POKE52,48:POKE56,48:CLR
32 GOSUB7000
35 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
37 POKE53281,3:POKE53280,6:GOSUB10000
40 LV=3
50 HS=0
60 SC=0
70 N$=""
80 TR=0
84 POKESO+1,30:FORDL=1TO50:NEXTDL:POKESO
+1,0
86 PRINTCHR$(147)
200 POKESO+1,30:FORDL=1TO50:NEXTDL:POKES
O+1,0
210 SP=INT(RND(1)*90)+9
220 ANS=INT(RND(1)*12)+1
230 HT=ANS*SP
240 PRINTLEFT$(AT$,3)SPC(4);CHR$(144);"H
EIGHT: "HT;CHR$(157);"    "
250 PRINTLEFT$(AT$,3)SPC(25)"SPEED: "SP;
CHR$(157);"    "
260 PRINTLEFT$(AT$,1)SPC(27)"LIVES: ";LV
;CHR$(157);"    "
270 PRINTLEFT$(AT$,1)SPC(1)"SCORE: ";SC;
CHR$(157);"    "
280 PRINTLEFT$(AT$,1)SPC(13);"HI SCORE:
";HS
```

```
290 PRINTLEFT$(AT$,23)SPC(16);"TIME ?? "
300 PRINTCHR$(149):FORJ=1TO38
310 IFJ>16 AND J<22 THEN GOTO340
320 PRINTLEFT$(AT$,21)SPC(J);CHR$(40)
330 PRINTLEFT$(AT$,20)SPC(J);CHR$(41)
340 NEXTJ
350 FORD=4TO20
360 PRINTLEFT$(AT$,D-1)SPC(19);" "
370 POKESO+1,30-D
380 PRINTLEFT$(AT$,D)SPC(19);CHR$(31);CH
R$(39)
390 FORT=1TO80
400 GETA$
410 IFA$=""THEN GOTO460
420 IFA$=CHR$(13) THEN POKESO+1,0:GOTO56
0
430 IFA$>"9" OR A$<"0" THENGOTO460
440 N$=N$+A$
442 FORL=1TO50:NEXTL
450 PRINTLEFT$(AT$,23)SPC(21);CHR$(144);
N$;" "
460 POKESO+1,0:NEXTT
470 NEXTD
480 PRINTLEFT$(AT$,20)SPC(19);" "
485 PRINTLEFT$(AT$,21)SPC(19);CHR$(42)
490 POKESO+1,10:POKESO+4,129:FORDL=15TO0
STEP-1:POKESO+24,DL
495 FORDD=1TO30:NEXTDD:NEXTDL:POKESO+1,0
:POKESO+4,17:POKESO+24,15
500 PRINTLEFT$(AT$,21)SPC(19);CHR$(42)
510 LV=LV-1
520 FORL=1TO1000:NEXTL
530 IFLV=0THENGOTO790
540 PRINTLEFT$(AT$,21)SPC(19);" "
550 GOTO210
560 :
562 IFN$=""THENGOTO460
564 TR=TR+3
570 CA=VAL(N$)
580 IFCA=ANS THEN GOTO630
590 :
600 PRINTLEFT$(AT$,23)SPC(16);"TIME ??
        "
610 N$=""
620 GOTO460
630 :
```

```
640 SC=SC+23-D-TR
650 PRINTCHR$(129):FORJ=DTO20
656 POKESO+1,30-J
660 PRINTLEFT$(AT$,J-2)SPC(18)"  "
670 PRINTLEFT$(AT$,J-1)SPC(18)"  "
680 PRINTLEFT$(AT$,J)SPC(18)CHR$(35)+CHR
$(36)
690 PRINTLEFT$(AT$,J+1)SPC(18);CHR$(37)+
CHR$(38)
700 :
710 FORDL=1TO10:NEXTDL
720 NEXTJ:POKESO+1,0
730 :
740 :
742 PRINTLEFT$(AT$,12)SPC(9);CHR$(144);"
A SUCCESSFUL LANDING!"
744 PRINTLEFT$(AT$,14)SPC(11);"SCORE ";2
3-D-TR;" POINTS"
750 FORDL=1TO750:NEXTDL
760 PRINTLEFT$(AT$,20)SPC(18);"  "
770 PRINTLEFT$(AT$,21)SPC(18);"  "
772 PRINTLEFT$(AT$,12)SPC(6);"
                              "
774 PRINTLEFT$(AT$,14)SPC(8);"
                              "
776 N$=""
778 TR=0
780 GOTO210
790 :
800 :
810 PRINTCHR$(147)
820 PRINTLEFT$(AT$,8)SPC(10);"YOUR SCORE
 IS ";SC
830 IFSC>HS THEN HS=SC:PRINTLEFT$(AT$,12
)SPC(10);"A NEW HIGH SCORE!"
850 PRINTLEFT$(AT$,18)SPC(10);" PRESS AN
Y KEY   "
855 PRINTLEFT$(AT$,20)SPC(10);" TO PLAY
AGAIN   "
860 GETQ$
870 IFQ$=""THEN GOTO 860
880 IFQ$="N" THEN GOTO 930
890 SC=0
900 LV=3
904 N$=""
906 TR=0
```

```
910 PRINTCHR$(147)
920 GOTO210
930 :
940 PRINTCHR$(147)
950 END
7000 REM *** READ IN GRAPHIC DATA ***
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
34)OR1
7060 FORI=0TO63:READA:POKE12568+I,A:NEXT
I
7070 DATA0,7,15,31,63,127,255,81
7072 DATA0,224,240,248,252,254,255,18
7074 DATA41,20,9,3,5,1,2,2
7076 DATA36,72,16,128,64,0,128,128
7078 DATA0,0,16,56,84,16,40,40
7080 DATA24,24,24,24,24,24,60,126
7082 DATA0,24,60,126,255,255,126,24
7084 DATA0,0,0,0,129,90,126,255
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

34

Racer


```
SPEED: 92 KM/HR    TIME: 77 SEC
```
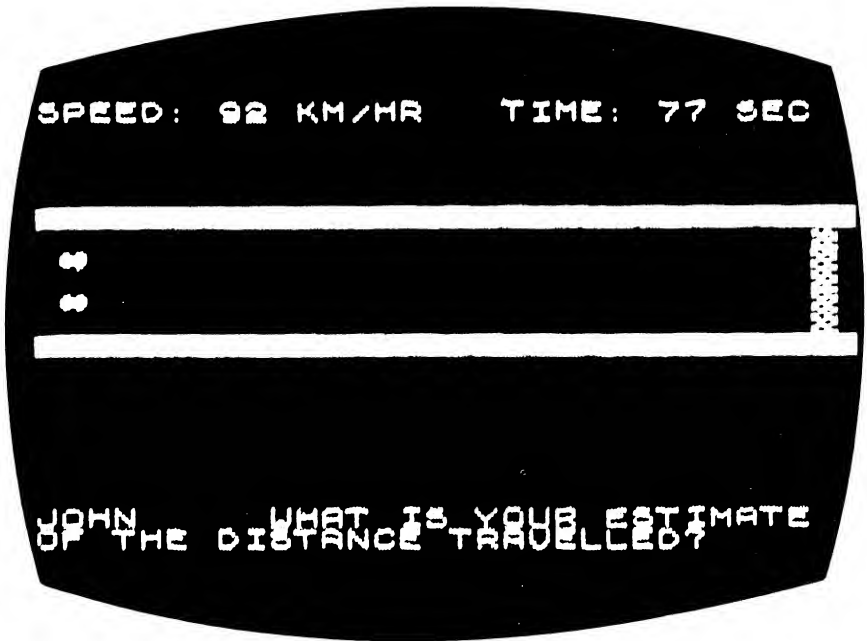
It's the last Grand Prix of the year and there are only two drivers who can win the World Championship - you or your opponent. There are two cars to choose from and the finishing line is in sight.

Only one can win and it's done by brain power not horse power.

How to play

The game is for two players so firstly type in your names and press RETURN after each one.

Both cars appear on the screen and the first player is set a problem to solve before moving their car.

The question is 'What is your estimate of the distance travelled?' At the top of the screen you are shown the speed and the time taken by the car. You must work out how far you have come. The more accurate your answer the further your car will be moved by the computer so think carefully before you type in your answer.

The winner's name will be flashed on the screen and you will be asked 'do you want to play again'. Press Y or N for yes or no.

Hint To help you, 36 kilometres per hour = 10 metres per second. So a car travelling at 72 k. per hour for 20 seconds would cover 400 metres.

Program

```
10 REM *********************
20 REM *                   *
22 REM *        RACER       *
24 REM *                   *
25 REM *********************
27 POKE52,48:POKE56,48:CLR
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147):GOSUB7000
35 POKE53280,14:POKE53281,12
40 DIMP$(2):C$(1)=CHR$(28):C$(2)=CHR$(31
)
45 GOSUB10000
50 DIMN(2)
140 PRINTLEFT$(AT$,9)SPC(5)"WHAT ARE THE
 PLAYERS NAMES? "
150 PRINTLEFT$(AT$,11)SPC(5);
160 INPUTP$(1)
170 PRINTLEFT$(AT$,13)SPC(4);P$(1);" YOU
 HAVE THE RED CAR "
180 PRINTLEFT$(AT$,15)SPC(5);
190 INPUTP$(2)
200 PRINTLEFT$(AT$,17)SPC(4);P$(2);" YOU
 HAVE THE BLUE CAR "
210 FORDL=1TO300:NEXTDL
220 PRINTCHR$(147)
240 FORJ=0TO38
250 PRINTLEFT$(AT$,9)SPC(J)"$"
260 PRINTLEFT$(AT$,15)SPC(J)"$"
```

```
270 NEXTJ
280 FORJ=10TO14
290 PRINTLEFT$(AT$,J)SPC(37)"$"
292 NEXTJ
300 N(1)=1
310 N(2)=1
320 PRINTLEFT$(AT$,11)SPC(1)C$(1);CHR$(3
5)
330 PRINTLEFT$(AT$,13)SPC(1)C$(2);CHR$(3
5)
340 FORK=1TO2
342 IFK=1THENPRINTC$(1)
344 IFK=2THENPRINTC$(2)
350 TM=INT(RND(1)*90)+10
360 SP=INT(RND(1)*150)+50
370 PRINTLEFT$(AT$,2)SPC(0)"SPEED: ";SP;
CHR$(157);"  KM/HR "
380 PRINTLEFT$(AT$,2)SPC(22)"TIME: ";TM;
CHR$(157);"  SEC "
382 PRINTLEFT$(AT$,18)SPC(10);"
                                "
385 PRINTLEFT$(AT$,18)SPC(19-(LEN(P$(K))
/2));P$(K)
390 PRINTLEFT$(AT$,20)SPC(8)" WHAT IS YO
UR ESTIMATE "
392 PRINTLEFT$(AT$,22)SPC(6)" OF THE DIS
TANCE TRAVELLED ?"
395 PRINTLEFT$(AT$,24)SPC(1)"
                             ";
397 PRINTLEFT$(AT$,24)SPC(11);
400 INPUT"NUMBER OF METRES ";ANS$
405 IFVAL(ANS$)<1THEN390
410 ANS=VAL(ANS$):CA=(SP*TM*1000)/3600
420 SC=INT(5-ABS((CA-ANS)/50))
430 FORJ=N(K)TON(K)+SC
440 PRINTLEFT$(AT$,9+K*2)SPC(N(K));" "
450 N(K)=N(K)+1
460 PRINTLEFT$(AT$,9+K*2)SPC(N(K));C$(K)
;CHR$(35)
470 POKESO+1,20*K:FORDL=1TO30:NEXTDL:POK
ESO+1,0
480 IFN(K)=38THENGOTO520
490 NEXTJ
500 NEXTK
510 GOTO340
520 POKESO+4,33:FORQ=4TO1STEP-1
```

```
525 FORDL=1TO50STEP2:FORDD=1TO4:POKESO+1
,DL*DD/Q:NEXTDD,DL
527 NEXTQ
530 POKESO+1,0:POKESO+4,129
540 FORDL=1TO500:NEXTDL
550 PRINTCHR$(147)
560 PRINTLEFT$(AT$,8)SPC(8);P$(K);" IS T
HE WINNER!"
570 PRINTLEFT$(AT$,14)SPC(9);"PLAY AGAIN
? (Y/N) "
580 GETA$
590 IFA$=""THENGOTO580
600 IFA$="Y"THENGOTO220
610 END
7000 REM *** READ IN GRAPHIC  DATA ***
7020 POKE56334,PEEK(56334)AND254
7030 POKE1,PEEK(1)AND251
7040 FORI=0TO511:POKE12288+I,PEEK(53248+
I):NEXTI
7050 POKE1,PEEK(1)OR4:POKE56334,PEEK(563
34)OR1
7060 FORI=0TO15:READA:POKE12568+I,A:NEXT
I
7070 DATA0,102,255,255,255,102,0,0
7080 DATA204,204,51,51,204,204,51,51
7095 POKE53272,(PEEK(53272)AND240)+12
7100 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,129:REM WAVEFORM
10080 RETURN
```

35

Proverbs

```
ARRANGE THE WORDS INTO A PROVERB.

  USE    F1 TO MOVE THE '>' UP
  USE    F7 TO MOVE THE '>' DOWN
  USE    D  TO 'DELETE' A WORD
  USE    I  TO 'INSERT' A WORD




          > FALL
            BEFORE
            COMES
            A
            PRIDE
```

There is an old proverb that says 'every cloud has a silver lining' and another which says 'it's an ill wind that blows nobody any good'.

But if your proverbs read 'every silver cloud has a lining' or 'it's nobody that an ill wind blows any good' could you sort them out and rearrange them properly?

Well, here is your chance to use the edit and cursor keys on your computer to move words around.

How to play

The screen will show you a proverb all jumbled up and you must reposition the words to make sense using the function keys to move the cursor down and up.

Key D to DELETE

Key I to INSERT

Line the cursor up against the word you wish to move and press the D key to delete. Then move the cursor down the board until you line up against the word where you wish to insert.

Press I and the missing word will be pushed in and the other words will rearrange below.

You keep moving words and using the D and I keys until you have the proverb in the correct order.

Programming Hints

As the program is random you may get the same proverb twice running. You can change lines 900 to 990 to put in your own proverbs or well known sayings.

Program

```
10 REM ********************
20 REM *                  *
22 REM *    PROVERBS       *
24 REM *                  *
25 REM ********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147);CHR$(158):GOSUB10000
35 POKE53280,6:POKE53281,0
40 DIMW$(10,12)
42 DIMS(12)
44 DIMQ(12)
50 C=1
52 TM=1
54 MM=0
56 FF=0
60 FORJ=1TO10
70 READT$
80 FORK=2TOLEN(T$)
90 IFMID$(T$,K,1)<>" "THENGOTO130
```

```
100 W$(J,C)=MID$(T$,TM,K-TM)
110 TM=K
120 C=C+1
130 NEXTK
140 C=1
150 TM=1
160 NEXTJ
180 WN=INT(RND(1)*10)+1
190 WC=0:GOSUB1000
200 FORJ=1TO12
210 IFW$(WN,J)=""THENGOTO230
220 WC=WC+1
230 NEXTJ
250 FORJ=1TOWC
260 R=INT(RND(1)*WC)+1
262 IFQ(R)=1THENGOTO260
270 S(J)=R
272 Q(R)=1
280 PRINTLEFT$(AT$,J+10)SPC(15)W$(WN,S(J
))
290 NEXTJ
300 PRINTLEFT$(AT$,11)SPC(14);">"
310 CP=11
320 FORDL=1TO10:NEXTDL
322 GETG$
330 IFG$=""THENGOTO320
340 IFG$<>CHR$(136) THENGOTO400
350 PRINTLEFT$(AT$,CP)SPC(14);" "
360 CP=CP+1
370 IFCP>10+WC THENCP=CP-1
380 PRINTLEFT$(AT$,CP)SPC(14)">"
390 GOTO320
400 IFG$<>CHR$(133) THENGOTO460
410 PRINTLEFT$(AT$,CP)SPC(14);" "
420 CP=CP-1
430 IFCP<11THENCP=CP+1
440 PRINTLEFT$(AT$,CP)SPC(14);">"
450 GOTO320
460 IFG$<>"D"THENGOTO520
470 IFCP<11 ORCP>11+WC THENGOTO320
480 IFMM<>0 THENPOKESO+1,30:FORDL=1TO100
:NEXTDL:POKESO+1,0:GOTO320
490 MM=S(CP-10)
492 FORK=CP-10TO11
494 S(K)=S(K+1)
496 NEXTK
```

```
498 S(12)=0
500 PRINTCHR$(147):GOSUB1000
510 FF=1:GOTO590
520 IFG$<>"I"THEN GOTO320
522 IFMM=0THENGOTO320
530 IFCP<11 ORCP>11+WC THENGOTO320
540 FORJ=12TOCP-10STEP-1
542 S(J)=S(J-1)
560 NEXTJ
570 S(CP-10)=MM
580 PRINTCHR$(147):GOSUB1000
582 MM=0
590 FORJ=1TO12
592 IFS(J)=0THENGOTO620
600 PRINTLEFT$(AT$,J+10)SPC(15);W$(WN,S(
J))
610 IFS(J)<>J THENFF=1
620 NEXTJ
630 IF FF=0THENGOTO700
640 FF=0
650 GOTO380
700 FORQQ=0TO16:POKE53281,QQ:FORTT=1TO15
:POKESO+1,QQ*TT:POKESO+1,250-QQ*TT:NEXTT
T,QQ
710 POKESO+1,0:POKE53281,0
720 PRINTLEFT$(AT$,21)SPC(6);"THAT IS TH
E CORRECT ORDER"
730 FORDL=1TO1000:NEXTDL
740 FORJ=1TO12
750 S(J)=0
760 Q(J)=0
770 NEXTJ
780 PRINTCHR$(147)
790 GOTO180
900 DATA" MANY HANDS MAKE LIGHT WORK "
910 DATA" TOO MANY COOKS SPOIL THE BROTH
 "
920 DATA " A STITCH IN TIME SAVES NINE "
930 DATA " EVERY CLOUD HAS A SILVER LINI
NG "
940 DATA " DON'T PUT ALL YOUR EGGS IN ON
E BASKET "
950 DATA " LOOK BEFORE YOU LEAP "
960 DATA" MORE HASTE LESS SPEED "
970 DATA" DON'T CROSS BRIDGES UNTIL YOU
COME TO THEM "
```

```
980 DATA" PRIDE COMES BEFORE A FALL "
990 DATA " HE WHO RIDES THE TIGER CANNOT
 DISMOUNT "
1000 REM DISPLY THE INSTRUCTIONS
1010 PRINTLEFT$(AT$,1)SPC(4);"ARRANGE TH
E WORDS INTO A PROVERB."
1020 PRINTLEFT$(AT$,3)SPC(6);"USE    F1 T
O MOVE THE '>' UP "
1030 PRINTLEFT$(AT$,4)SPC(6);"USE    F7 T
O MOVE THE '>' DOWN"
1040 PRINTLEFT$(AT$,5)SPC(6);"USE    D  T
O 'DELETE' A WORD"
1050 PRINTLEFT$(AT$,6)SPC(6);"USE    I  T
O 'INSERT' A WORD"
1060 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

36

Simon


```
SEQUENCES:5          SCORE:15


    334562
```
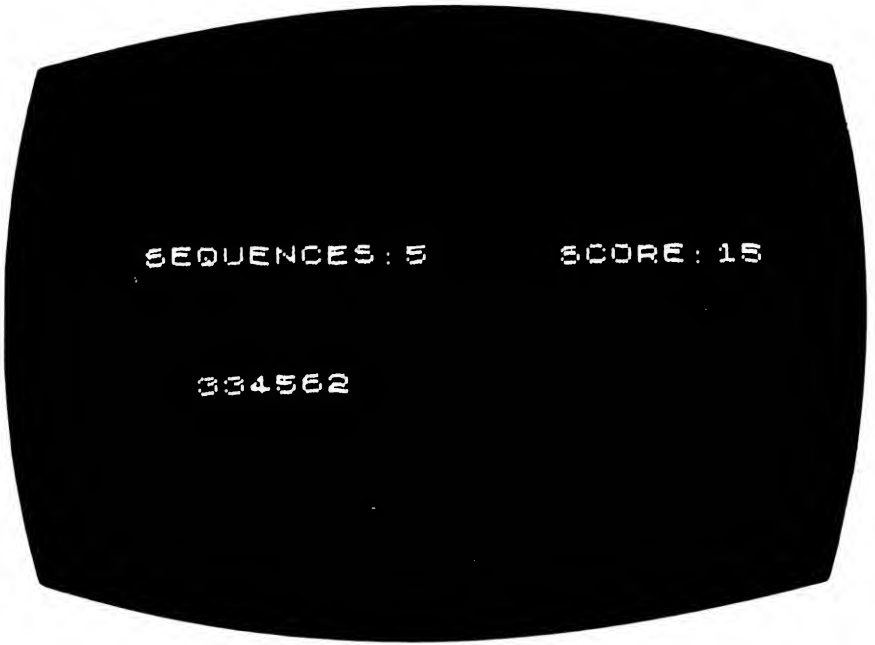
This is our version of this very popular game where you have to beat the computer by having a good memory.

You will be shown numbers, or colours, and have only a few seconds to memorise them before the screen goes blank and you are asked to repeat them in the same sequence as the original.

How to play

Your computer will ask if you want to play Numbers or Colours and you make your selection using keys 1 or 2. The computer will then put a sequence of numbers on the screen and ask you to remember them. If you type in the wrong sequence the computer will give you a loud 'raspberry' and show you the correct answer.

To stop playing numbers and switch to colours press the RUN/
STOP key and then type RUN again and you will be back at the
beginning.

To play the colour sequence you have to press keys 0 to 8, with the
colours shown on the front of these keys.

Programming Hints

The two routines for selecting the numbers and colours are in lines
210 and 250. Why not try and write your own routines to generate
letters as well? Remember that computers recognise letters by
their 'ASCII' codes which start with 65 for A, then 66 for B and so
on.

Program

```
10 REM *********************
20 REM *                   *
22 REM *      SIMON         *
24 REM *                   *
25 REM *********************
27 POKE53280,12:POKE53281,12
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147)
35 GOSUB10000
40 T=1
50 SC=0
60 TR=0
70 PRINTLEFT$(AT$,8)SPC(10);CHR$(5);"1.
NUMBERS"
80 PRINTLEFT$(AT$,10)SPC(10);"2. COLOURS
"
90 PRINTLEFT$(AT$,12)SPC(10);"PRESS 1 OR
 2"
100 GETA$
110 IFA$=""THEN100
112 :
120 IFA$<>"1"ANDA$<>"2"THENGOTO100
130 M$=""
140 PRINTCHR$(147)
```

```
145 PRINTLEFT$(AT$,1)SPC(14);CHR$(5);"S
I M O N "
150 PRINTLEFT$(AT$,3)SPC(4);CHR$(158);"S
EQUENCES:";TR
160 PRINTLEFT$(AT$,3)SPC(20);CHR$(5);"SC
ORE:";SC
170 PRINTLEFT$(AT$,6)SPC(6);
180 C=INT(RND(1)*6)+1
190 FORJ=1TOT
200 IFA$="2"THENGOTO250
210 R=INT(RND(1)*10)
215 POKESO+1,R+10:POKESO+4,17:FORDL=1TO5
0:NEXTDL:POKESO+4,16
220 PRINTR;
240 GOTO270
250 R=INT(RND(1)*8)
260 POKE646,R:PRINTCHR$(32);CHR$(18);CHR
$(32);CHR$(32);CHR$(17);
262 PRINTCHR$(157);CHR$(157);CHR$(32);CH
R$(32);CHR$(146);CHR$(145);
265 POKESO+1,R+10:POKESO+4,17:FORDL=1TO5
0:NEXTDL:POKESO+4,16
270 R=R-(A$="2")
275 M$=M$+RIGHT$(STR$(R),1)
278 FORDL=1TO100:NEXTDL
280 NEXTJ
282 FORDL=1TO150:NEXTDL
284 PRINTLEFT$(AT$,6)SPC(6);"
                             "
285 PRINTLEFT$(AT$,7)SPC(6);"
                             "
287 POKE198,0
290 PRINTLEFT$(AT$,16)SPC(6);CHR$(144);"
WHAT IS YOUR ANSWER?":IFA$="1"THEN315
295 PRINTLEFT$(AT$,18)SPC(6);:N$=""
297 B$="":GETB$:IF(B$<"1"ORB$>"8")ANDB$<
>CHR$(13)ANDB$<>CHR$(20)THEN297
298 IFB$=CHR$(13)THENPRINT:GOTO330
299 IFB$<>CHR$(20)THENGOTO305
300 PRINTCHR$(157);CHR$(157);CHR$(32);CH
R$(32);CHR$(17);CHR$(157);
302 PRINTCHR$(157);CHR$(32);CHR$(32);CHR
$(145);CHR$(157);CHR$(157);CHR$(157);
304 N$=LEFT$(N$,LEN(N$)-1):GOTO297
305 POKE646,VAL(B$)-1::PRINTCHR$(32);CHR
$(18);CHR$(32);CHR$(32);CHR$(17);
```

```
306 PRINTCHR$(157);CHR$(157);CHR$(32);CH
R$(32);CHR$(146);CHR$(145);
307 POKESO+1,10+(VAL(B$)-1):POKESO+4,17:
FORDL=1TO50:NEXTDL:POKESO+4,16
310 N$=N$+B$:GOTO297
315 PRINTLEFT$(AT$,18)SPC(6);:N$=""
317 B$="":GETB$:IF(B$<"0"ORB$>"9")ANDB$<
>CHR$(13)ANDB$<>CHR$(20)THEN317
322 IFB$=CHR$(13)THENPRINT:GOTO330
323 IFB$=CHR$(20)THENPRINTCHR$(157);CHR$
(157);CHR$(157);CHR$(32);CHR$(157);
324 IFB$=CHR$(20)THENN$=LEFT$(N$,LEN(N$)
-1):GOTO317
325 PRINTB$;"  ";
326 POKESO+1,10+(VAL(B$)):POKESO+4,17:FO
RDL=1TO50:NEXTDL:POKESO+4,16
327 N$=N$+B$:GOTO317
330 TR=TR+1
335 IFN$=M$ THENGOTO440
340 PRINTCHR$(147)
350 PRINTLEFT$(AT$,6)SPC(8);CHR$(5);"THE
 SEQUENCE WAS:"
360 PRINTLEFT$(AT$,10)SPC(6);
370 IFA$="2"THENGOTO400
380 FORJ=1TOLEN(M$):PRINTMID$(M$,J,1)"
";:NEXTJ
390 GOTO424
400 FORJ=1TOT
410 POKE646,VAL(MID$(M$,J,1))+(A$="2")
411 PRINTCHR$(32);CHR$(18);CHR$(32);CHR$
(32);CHR$(17);CHR$(157);CHR$(157);
412 PRINTCHR$(32);CHR$(32);CHR$(146);CHR
$(145);
413 BB=VAL(MID$(M$,J,1))+(A$="2")
414 POKESO+1,10+BB:POKESO+4,17:FORDL=1TO
50:NEXTDL:POKESO+4,16
415 FORDL=1TO100:NEXTDL
420 NEXTJ
424 FORDL=1TO400:NEXTDL
430 GOTO130
440 :
450 PRINTLEFT$(AT$,21)SPC(11);CHR$(5);"C
ORRECT!"
460 SC=SC+T
470 T=T+1
474 FORDL=1TO300:NEXTDL
```

```
480 GOTO130
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM    PITCH
10040 POKESO+5,9 :REM    ATTACK/DECAY
10050 POKESO+6,240:REM   SUSTAIN/RELEASE
10060 POKESO+24,15:REM   VOLUME
10070 POKESO+4,16 :REM   WAVEFORM
10080 RETURN
```

37

Balance


```
         TRIES: 1              SCORE: 1
YOUR WEIGHT TO BALANCE IS 875g.
```
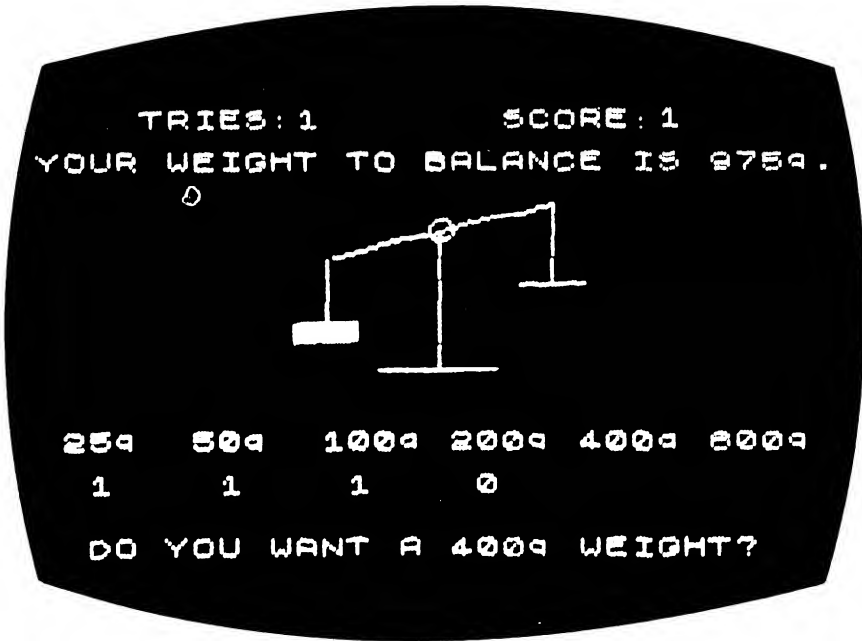
If you like baking cakes, weighing out sweets or even checking out who has the heaviest conker this year then this program is for you.

You have to work out, in as few moves as possible, from a selection of weights, how many you need to balance a set of scales.

How to play

On the screen you will see a set of scales with a weight on the left hand set of pans.

The computer will ask you for your choice of weights from six which will be displayed, and marked, along the bottom of the screen. The computer will move along the row and stop at each weight and ask you if you wish to use it. For yes press Y and for no press N.

The screen will show your tries and scores.

Program

```
10 REM ********************
20 REM *                  *
22 REM *      BALANCE      *
24 REM *                  *
25 REM ********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 SC=0:TR=0
33 W1$=CHR$(18)+CHR$(165)+CHR$(165)+CHR$
(165)+CHR$(165)+CHR$(146)
34 W2$=CHR$(18)+CHR$(165)+CHR$(165)+CHR$
(146)
35 GOSUB10000:POKE53280,6:POKE53281,15
36 PRINTCHR$(147);CHR$(144)
40 K=25
42 PRINTLEFT$(AT$,2)SPC(4)"TRIES:";TR
44 PRINTLEFT$(AT$,2)SPC(23)"SCORE:"SC
50 FORJ=1TO35STEP5
60 PRINTLEFT$(AT$,23)SPC(J);K;CHR$(157);
"G."
70 K=K*2
80 NEXTJ
90 PRINTLEFT$(AT$,6);:GOSUB2000
100 IC=INT(RND(1)*5)+2
110 TT=0
120 R=(INT(RND(1)*127)+1)*25
130 PRINTLEFT$(AT$,4)SPC(2)"YOUR WEIGHT
TO BALANCE IS";R;CHR$(157);"G."
140 TR=TR+1
150 PRINTLEFT$(AT$,8)SPC(10)"     "
160 D=0:GOSUB1000
170 PRINTLEFT$(AT$,16)SPC(10)CHR$(28);W1
$
180 K=25
185 WAIT197,64:POKE198,0
190 FORJ=1TO7
200 PRINTCHR$(144):PRINTLEFT$(AT$,20)SPC
(5);"                              "
201 PRINTLEFT$(AT$,20)SPC(5);"DO YOU WAN
T A";K;CHR$(157);"G. WEIGHT?"
202 GETA$
```
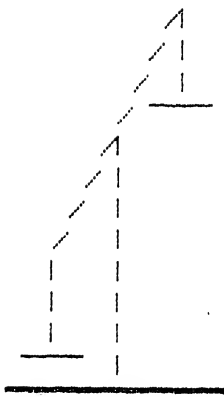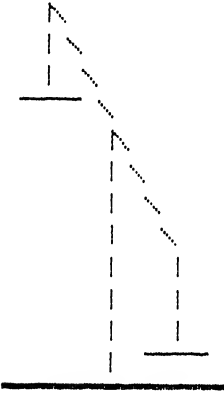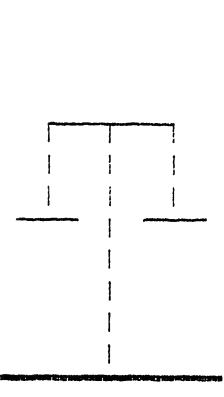
```
204 IFA$=""THEN GOTO202
206 IFA$="Y" THEN TT=TT+K: PRINTLEFT$(AT
$,24)SPC((J-1)*5+3);"1";
208 IFA$<>"Y" THEN PRINTLEFT$(AT$,24)SPC
((J-1)*5+3);"0";
210 FORD=1TO50:NEXTD
214 K=K*2
216 POKESO+1,20:FORDL=1TO50:NEXTDL:POKES
O+1,0
220 NEXTJ
222 PRINTLEFT$(AT$,8)SPC(19)CHR$(31);W2$
226 FORD=1 TO 500:NEXTD
228 IFTT<RTHENGOTO330
230 D=1:PRINTLEFT$(AT$,6);CHR$(144);:GOS
UB4000
240 PRINTLEFT$(AT$,12)SPC(10)CHR$(28);W1
$
244 PRINTLEFT$(AT$,12)SPC(18)CHR$(31);W1
$
250 IFTT>RTHENGOTO300
260 D=0:PRINTLEFT$(AT$,6);CHR$(144);:GOS
UB4000
262 PRINTLEFT$(AT$,12)SPC(10);CHR$(28);W
1$
264 PRINTLEFT$(AT$,12)SPC(18);CHR$(31);W
1$
270 FORD1=1TO10:FORD2=1TO5:FORD3=1TO4:PO
KESO+1,D1*D2*D3:NEXTD3,D2,D1:POKESO+1,0
275 FORDL=1TO500:NEXTDL
280 SC=SC+1
290 GOTO340
300 D=0:PRINTLEFT$(AT$,6);CHR$(144);:GOS
UB3000
310 PRINTLEFT$(AT$,8)SPC(11);CHR$(28);W2
$
320 PRINTLEFT$(AT$,16)SPC(18);CHR$(31);W
1$
330 :
340 IFTT<>RTHENFORD=1TO150:POKESO+1,RND(
1)*256:NEXTD:POKESO+1,0
350 GOTO36
800 RETURN
1000 RETURN
1100 RETURN
```

```
2000 PRINT"                         /|              "
2001 PRINT"                        / |              "
2002 PRINT"                       /  |              "
2003 PRINT"                      /  ___             "
2004 PRINT"                    /|              "
2005 PRINT"                   / |              "
2006 PRINT"                  /  |              "
2007 PRINT"                 /   |              "
2008 PRINT"                 |   |              "
2009 PRINT"                 |   |              "
2010 PRINT"                 |   |              "
2011 PRINT"               ___   |              "
2012 PRINT"              _____      "
2020 RETURN
3000 PRINT"                 |\              "
3001 PRINT"                 | \              "
3002 PRINT"                 |  \              "
3003 PRINT"               ___   \              "
3004 PRINT"                    |\              "
3005 PRINT"                    | \              "
3006 PRINT"                    |  \              "
3007 PRINT"                    |   \              "
3008 PRINT"                    |   |              "
3009 PRINT"                    |   |              "
3010 PRINT"                    |  ___              "
3011 PRINT"                    | ___              "
3012 PRINT"              _____      "
3020 RETURN
4000 PRINT"                                  "
4001 PRINT"                                  "
4002 PRINT"                                  "
4003 PRINT"                                  "
4004 PRINT"              ___ ___ ___              "
4005 PRINT"              |   |   |              "
4006 PRINT"              |   |   |              "
4007 PRINT"            ___   |   ___              "
4008 PRINT"                  |                  "
4009 PRINT"                  |                  "
4010 PRINT"                  |                  "
4011 PRINT"                  |                  "
4012 PRINT"              _____      "
4020 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM  ATTACK/DECAY
```

```
10050 POKESO+6,240:REM SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,17 :REM WAVEFORM
10080 RETURN
```

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Chemist
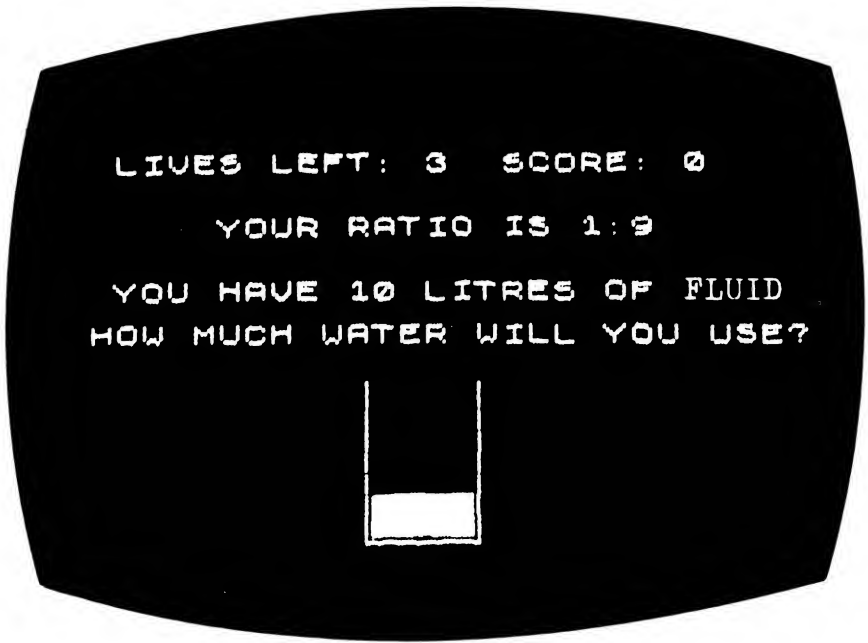
A mad scientist has made a highly powerful liquid which, if not mixed with water and diluted properly, will explode and destroy your house.

Only you can stop the liquid exploding by working out a formula to decide how much water is needed to make the mixture safe.

How to play

The screen will show a flask containing the dangerous fluid and telling you how many litres the vessel contains.

You must work out how much water is required to make the fluid harmless using the ratio at the top of the screen. If you are correct to within 5% you are safe but an error outside this range will mean an explosion and the loss of one of your three lives.

Type in your estimate of water needed, press RETURN and watch the water drip into the flask - Good Luck.

Programming Hints

You can alter the ratios given by changing the numbers in lines 60 and 64. Increase them to make the game more difficult. The number in line 50 governs the number of lives you have at the start.

Program

```
10 REM ***********************
20 REM *                     *
22 REM *     CHEMIST         *
24 REM *                     *
25 REM ***********************
26 GOSUB10000:SC=0
28 POKE53280,8:POKE53281,4
30 AT$=CHR$(19):FORT=1TO25:AT$=AT$+CHR$(
17):NEXTT
32 S$(1)=CHR$(170)+"        "+CHR$(180)
34 S$(2)=" ":FORT=1TO6:S$(2)=S$(2)+CHR$(
184):NEXTT
35 FORT=1TO6
36 F$(1)=F$(1)+CHR$(164)
38 F$(2)=F$(2)+CHR$(175)
40 F$(3)=F$(3)+CHR$(185)
42 F$(4)=F$(4)+CHR$(162)
44 F$(5)=F$(5)+CHR$(184)
46 F$(6)=F$(6)+CHR$(183)
48 F$(7)=F$(7)+CHR$(163)
49 F$(8)=F$(8)+CHR$(32):NEXTT
50 LV=3
52 F$(5)=CHR$(18)+F$(5)+CHR$(146)
54 F$(6)=CHR$(18)+F$(6)+CHR$(146)
56 F$(7)=CHR$(18)+F$(7)+CHR$(146)
58 F$(8)=CHR$(18)+F$(8)+CHR$(146)
60 A=INT(RND(1)*4)+1
64 B=INT(RND(1)*5)+5
65 PRINTCHR$(147)
68 PRINTLEFT$(AT$,11)SPC(11)CHR$(144)"YO
UR RATIO IS:"
```

```
70 PRINTLEFT$(AT$,13)SPC(1)A" PARTS FLUI
D TO ";B;" PARTS WATER"
74 FORDL=1TO2000:NEXTDL
80 PRINTCHR$(147)
100 PRINTLEFT$(AT$,1)SPC(12)CHR$(5);"LIV
ES LEFT: ";LV
102 PRINTLEFT$(AT$,3)SPC(9)CHR$(31);"YOU
R RATIO IS "A;":";B
105 POKE646,0
110 FORT=1TO15:PRINTLEFT$(AT$,8+T)SPC(25
)S$(1):NEXTT
120 PRINTLEFT$(AT$,24)SPC(25)S$(2)
150 R=INT(RND(1)*20)+1
160 PRINTLEFT$(AT$,10)SPC(6);CHR$(28);"Y
OU HAVE"
162 PRINTLEFT$(AT$,11)SPC(9)R
164 PRINTLEFT$(AT$,12)SPC(4)"LITRES OF F
LUID"
165 GOSUB800
170 PRINTLEFT$(AT$,14)SPC(4)CHR$(144);"H
OW MUCH WATER"
172 PRINTLEFT$(AT$,15)SPC(4)" WILL YOU U
SE? "
180 PRINTLEFT$(AT$,17)SPC(6)"  ....";
190 PRINTLEFT$(AT$,17)SPC(6);:INPUTANS$
192 IFVAL(ANS$)=0THENGOTO190
194 ANS=VAL(ANS$)
200 T=(R/A)*B
320 IFANS>(T-T/20) AND ANS<(T+T/20) THEN
 GOTO500
330 POKESO+4,129:POKESO+6,240
340 FORT=1TO100:POKE53280,T:POKE53281,T+
1:POKESO+1,T
350 NEXTT:POKESO+4,128:POKESO+6,32
360 PRINTCHR$(147)
365 POKE53281,6
370 PRINTLEFT$(AT$,12)SPC(11)"ONE LIFE L
OST!"
390 FORDL=1TO1000:NEXTDL
400 LV=LV-1
410 POKE53281,4
420 IFLV=0THENGOTO590
430 GOTO80
500 :
520 GOSUB700
550 PRINTLEFT$(AT$,25)SPC(5)"THE FLUID I
```

```
S SAFELY DILUTED";
560 SC=SC+1
570 FORDL=1TO2000:NEXTDL
580 GOTO60
590 PRINTCHR$(147)
600 PRINTLEFT$(AT$,9)SPC(13)"ALL LIVES L
OST!"
610 PRINTLEFT$(AT$,12)SPC(8)"YOUR FINAL
SCORE IS"SC
620 END
700 PRINTLEFT$(AT$,5)SPC(29)CHR$(164)
702 PRINTLEFT$(AT$,6)SPC(28)CHR$(117);CH
R$(177);CHR$(96);CHR$(96)
705 POKE646,6
710 FORH=HH+1TO9:FORT=1TO8
712 FORDR=7TO22-H:PRINTLEFT$(AT$,DR)SPC(
28)"."
714 PRINTLEFT$(AT$,DR)SPC(28)" ":NEXTDR
715 POKESO+4,129
720 PRINTLEFT$(AT$,23-H)SPC(26)F$(T)
725 FORDL=1TO50:NEXTDL
730 POKESO+4,128
740 NEXTT
750 NEXTH
760 RETURN
800 HH=INT(9*A/(A+B)):CO=INT(RND(1)*15+1
):IFCO=4THEN800
805 POKE646,CO
810 FORH=0TOHH:FORT=1TO8
820 PRINTLEFT$(AT$,23-H)SPC(26)F$(T)
825 FORDL=1TO50:NEXTDL
840 NEXTT
850 NEXTH
860 RETURN
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10030 POKESO+1,20:REM  PITCH
10040 POKESO+5,49:REM  ATTACK/DECAY
10050 POKESO+6,32:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM VOLUME
10070 POKESO+4,128:REM WAVEFORM
10080 RETURN
```

39

Odd Word Out
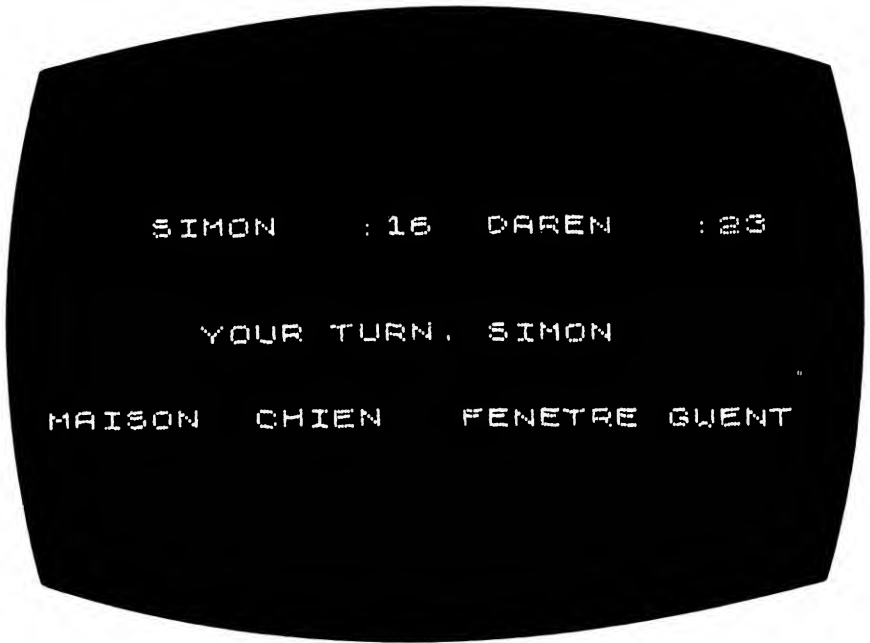
At last - a chance to prove how quick you are at spotting the odd word, and also beat a time clock.

You will be given a selection of words which either mean the same thing or are related in some way except for one 'odd man out' which must be identified.

How to play

This is a game for two players so put in your names, remembering to press RETURN between each one.

Your screen will now display four words, for example:

herring, pike, bridge, roach

The odd man out here is bridge - the others are all fish.

It could have been herring, pike, roach, bream, however, and then which would have been the odd man out?

Press the space bar to 'shoot' the odd man out.

Programming Hints

Random selection may mean that the same sequence may pop up twice running.

If you would like to use your own selection of words then you can change the data in lines 800 to 970.

Program

```
10 REM *********************
20 REM *                   *
22 REM *    ODD WORD OUT    *
24 REM *                   *
25 REM *********************
35 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
37 POKE53280,11:POKE53281,1
40 DIMW$(54)
45 GOSUB10000
50 DIMP$(2)
60 DIMS(2)
70 C$(0)=CHR$(156):C$(1)=CHR$(28):C$(2)=
CHR$(30):C$(3)=CHR$(31)
130 PRINTCHR$(147)
140 PRINTLEFT$(AT$,4)SPC(9);
150 INPUT"1 OR 2 PLAYERS ";N
152 IFN<1OR N>2 THENGOTO150
160 PRINTLEFT$(AT$,6)SPC(5);"WHAT ARE TH
E PLAYERS NAMES ?"
170 FORJ=1TON
180 PRINTLEFT$(AT$,10+J*2)SPC(5);"PLAYER
 ";J;"?";
190 INPUTP$(J)
210 NEXTJ
```

```
220 FORDL=1TO200:NEXTDL
230 PRINTCHR$(147)
240 FORJ=1TO54
250 READW$(J)
260 NEXTJ
270 FORT=1TON
272 PRINTCHR$(144)
275 IFN=1THENPRINTLEFT$(AT$,1)SPC(16);P$
(1);":";S(1):GOTO284
280 PRINTLEFT$(AT$,1)SPC(6);P$(1);":";S(
1)
284 IFN<2THENGOTO294
290 PRINTLEFT$(AT$,1)SPC(22);P$(2);":";S
(2)
294 IFS(1))=100 OR S(2))=100 THEN GOTO77
0
300 G=INT(RND(1)*18)
310 G=G*3+1
314 PS=10
315 PRINTCHR$(144)
320 PRINTLEFT$(AT$,6)SPC(11);"YOUR TURN,
 ";P$(T)
324 FORDL=1TO150:NEXTDL
330 R1=INT(RND(1)*4)
335 R2=INT(RND(1)*4)
340 IFR2=R1 THEN GOTO335
350 R3=INT(RND(1)*4)
355 IFR3=R2 OR R3=R1 THEN GOTO350
360 R4=INT(RND(1)*4)
365 IFR4=R3 OR R4=R2 OR R4=R1 THEN GOTO
360
370 C1=INT(RND(1)*4)
372 C2=INT(RND(1)*4)
374 IFC2=C1 THEN GOTO372
376 C3=INT(RND(1)*4)
378 IFC3=C2 OR C3=C1 THEN GOTO376
380 C4=INT(RND(1)*4)
382 IFC4=C3 OR C4=C2 OR C4=C1 THEN GOTO
380
400 E=INT(RND(1)*54)+1
405 SP$="              "
410 IF E<G+3 AND E>G-1 THEN GOTO 400
415 PRINTLEFT$(AT$,10)SPC(0);"
                                "
417 X1=INT(5-(LEN(W$(G))/2)):X2=10-LEN(W
$(G))-X1:PRINTC$(C1)
```

```
418 PRINTLEFT$(AT$,9)SPC(R1*10);CHR$(18)
;SP$
419 PRINTLEFT$(AT$,10)SPC(R1*10);CHR$(18
);LEFT$(SP$,X1);W$(G);LEFT$(SP$,X2)
420 PRINTLEFT$(AT$,11)SPC(R1*10);CHR$(18
);SP$
425 X3=INT(5-(LEN(W$(G+1))/2)):X4=10-LEN
(W$(G+1))-X3:PRINTC$(C2)
428 PRINTLEFT$(AT$,9)SPC(R2*10);CHR$(18)
;SP$
429 PRINTLEFT$(AT$,10)SPC(R2*10);CHR$(18
);LEFT$(SP$,X3);W$(G+1);LEFT$(SP$,X4)
430 PRINTLEFT$(AT$,11)SPC(R2*10);CHR$(18
);SP$
435 X5=INT(5-(LEN(W$(G+2))/2)):X6=10-LEN
(W$(G+2))-X5:PRINTC$(C3)
438 PRINTLEFT$(AT$,9)SPC(R3*10);CHR$(18)
;SP$
439 PRINTLEFT$(AT$,10)SPC(R3*10);CHR$(18
);LEFT$(SP$,X5);W$(G+2);LEFT$(SP$,X6)
440 PRINTLEFT$(AT$,11)SPC(R3*10);CHR$(18
);SP$
445 X7=INT(5-(LEN(W$(E))/2)):X8=10-LEN(W
$(E))-X7:PRINTC$(C4)
448 PRINTLEFT$(AT$,9)SPC(R4*10);CHR$(18)
;SP$
449 PRINTLEFT$(AT$,10)SPC(R4*10);CHR$(18
);LEFT$(SP$,X7);W$(E);LEFT$(SP$,X8)
450 PRINTLEFT$(AT$,11)SPC(R4*10);CHR$(18
);SP$
460 P=1
470 D=1
480 PRINTLEFT$(AT$,20)SPC(P);" "
490 P=P+D
495 POKESO+4,129:POKESO+1,30+P:POKESO+4,
33
500 PRINTLEFT$(AT$,20)SPC(P);CHR$(193)
510 GETA$
520 IFA$<>""THEN GOTO 550
530 IFP>38 OR P<1 THEN D=-D:PS=PS-1
540 GOTO480
550 :
560 FORJ=18TO12STEP-1
570 POKESO+1,50-J
580 PRINTLEFT$(AT$,J)SPC(P);CHR$(194)
600 PRINTLEFT$(AT$,J+1)SPC(P)" "
```
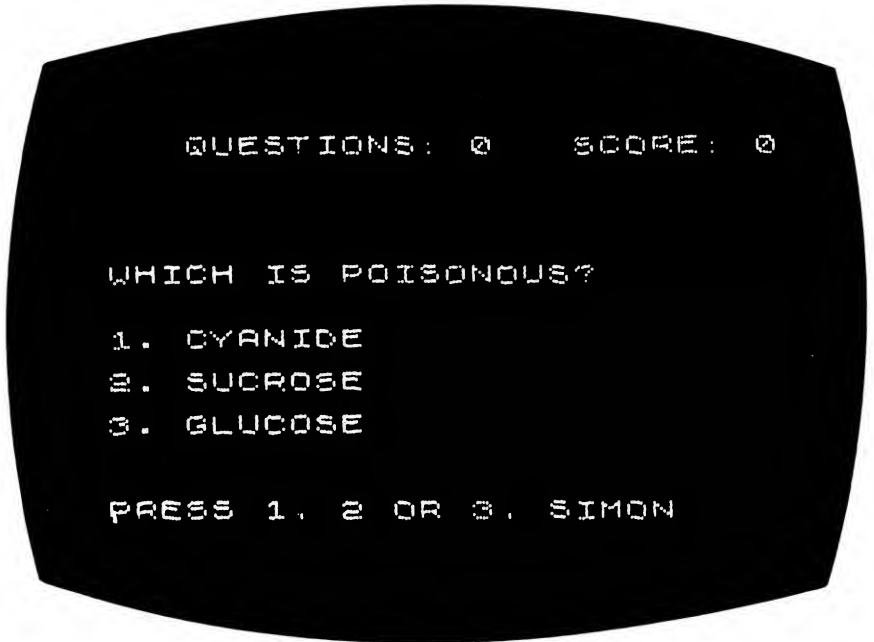
```
610 NEXTJ:POKESO+1,0
614 PRINTLEFT$(AT$,J+1)SPC(P)" "
620 IFP>=R4*10AND P<=R4*10+9THENGOTO650
630 POKESO+1,3:FORDL=1TO1000STEP3:POKESO
,(DLAND255):NEXTDL:POKESO+1,0:POKESO,0
640 GOTO730
650 :
660 FORJ=1TO10
670 PRINTLEFT$(AT$,10)SPC(R4*10);CHR$(18
);LEFT$(SP$,X7);CHR$(146);W$(E)
680 POKESO+1,5*J
700 PRINTLEFT$(AT$,10)SPC(R4*10);CHR$(18
);LEFT$(SP$,X7);W$(E)
710 NEXTJ:POKESO+1,0
716 IFPS<1 THENPS=1
720 S(T)=S(T)+PS:PRINTCHR$(144)
722 PRINTLEFT$(AT$,16)SPC(11);"SCORE "PS
;" POINTS!"
730 FORD=1TO1000:NEXTD
740 PRINTCHR$(147)
750 NEXTT
760 GOTO270
770 FORDL=1TO100:NEXTDL
782 IFS(2)>=100 THENGOTO786
784 PRINTLEFT$(AT$,1)SPC(7);P$(1);" IS T
HE WINNER!":GOTO790
786 PRINTLEFT$(AT$,10)SPC(7);P$(2);" IS
THE WINNER!"
790 END
800 DATA "LONDON","PARIS","ROME"
810 DATA"CAT","GERBIL","HORSE"
820 DATA"FORD","BRIDGE","FERRY"
830 DATA"ROACH","PIKE","HERRING"
840 DATA"QUARRY","QUIZ","QUARTZ"
850 DATA"PING","BANG","CLICK"
860 DATA"DORSET","SUSSEX","SUFFOLK"
870 DATA"YACHT","DINGHY","SLOOP"
880 DATA"MINIM","LEVEL","REFER"
890 DATA"FRANCE","GERMANY","ITALY"
900 DATA"MAISON","CHIEN","FENETRE"
910 DATA"SPECTRUM","DRAGON","ORIC"
920 DATA"CRICKET","FOOTBALL","TENNIS"
930 DATA"GEORGE","CHARLES","RICHARD"
940 DATA"STOUR","TRENT","THAMES"
950 DATA"DYFED","GWENT","CLWYD"
960 DATA"CANARY","FINCH","SPARROW"
```

```
970 DATA"DRAW","POKE","PRINT"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM   ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,33 :REM  WAVEFORM
10080 RETURN
```

40

Science Quiz


```
QUESTIONS: 0    SCORE: 0


WHICH IS POISONOUS?

1. CYANIDE
2. SUCROSE
3. GLUCOSE


PRESS 1, 2 OR 3, SIMON
```

This is a program of multiple choice questions where you are given a selection of statements and asked to choose the correct answer.

If you find these questions too difficult or too easy you can ask your parents to provide your computer with some questions of your own. We will tell you how at the end of this introduction.

How to play

The computer will ask for your name and you type it in and press RETURN

A choice of statements will appear on the screen and you will be asked to choose the correct answer.

Example: 'What will you grow if you plant an acorn?'

> 1. An elm tree
>
> 2. A rose
>
> 3. An oak tree

To answer press 1, 2 or 3

If you are correct the computer will tell you so.

If you are wrong the computer will tell you 'That is wrong'. Remember that the faster you answer, the more points you score. If you are too slow, you will run out of time.

Programming Hints

The lines to change for your own questions are 600, to 795. Type in the question first, then the correct answer followed by two wrong answers. Remember to enclose each item in inverted commas ("") as shown on the listing.

Program

```
10 REM ***********************
20 REM *                     *
22 REM *     SCIENCE QUIZ     *
24 REM *                     *
25 REM ***********************
30 AT$=CHR$(17):FORT=1TO6:AT$=AT$+AT$:NE
XTT:AT$=CHR$(19)+AT$
32 PRINTCHR$(147):GOSUB10000
35 POKE53280,9:POKE53281,7:PRINTCHR$(28)
40 SC=0
50 QN=0
60 RS=0
70 DIMQ$(20)
80 DIMA$(20,3)
90 :
100 PRINTCHR$(147);CHR$(17);CHR$(17)"
    WHAT IS YOUR NAME";:INPUTN$
```

```
110 FORJ=1TO20
120 READQ$(J)
130 FORK=1TO3
140 READA$(J,K)
150 NEXTK
160 NEXTJ
170 PRINTCHR$(147)
180 PRINTLEFT$(AT$,2)SPC(6)"QUESTIONS: "
;QN
190 PRINTLEFT$(AT$,2)SPC(22)"SCORE: ";SC
200 R=INT(RND(1)*20)+1
210 IFR=RSTHENGOTO200
220 RS=R
230 PRINTLEFT$(AT$,7)SPC(5)Q$(R)
240 RA=INT(RND(1)*3)+1
250 RB=INT(RND(1)*3)+1
260 IFRB=RA THEN GOTO250
270 RC=INT(RND(1)*3)+1
280 IFRC=RA OR RC=RB THENGOTO270
290 PRINTLEFT$(AT$,10)SPC(7)"1. ";A$(R,R
A)
300 PRINTLEFT$(AT$,12)SPC(7)"2. ";A$(R,R
B)
310 PRINTLEFT$(AT$,14)SPC(7)"3. ";A$(R,R
C)
320 PRINTLEFT$(AT$,18)SPC(7)"▧ PRESS 1,
2 OR 3, ";N$;" "
330 QN=QN+1
340 FORT=1TO1000
350 GETR$
360 IFT/100=INT(T/100) THEN POKESO+1,20:
FORDL=1TO40:NEXTDL:POKESO+1,0
370 IFR$="1"THENT$=A$(R,RA):GOTO440
380 IFR$="2"THENT$=A$(R,RB):GOTO440
390 IFR$="3"THENT$=A$(R,RC):GOTO440
400 NEXTT
410 POKESO+1,10:FORDL=1TO500:NEXTDL:POKE
SO+1,0
420 PRINTLEFT$(AT$,20)SPC(6)"OUT OF TIME
!"
430 GOTO520
440 IFA$(R,1)=T$THENGOTO480
450 :
460 PRINTLEFT$(AT$,20)SPC(9);"THAT IS WR
ONG, ";N$
470 GOTO520
```

```
480 :
490 PRINTLEFT$(AT$,20)SPC(14);"CORRECT!"
492 SI=10-INT(T/100)
500 SC=SC+SI
520 FORD=1TO1000:NEXTD
522 IFQN=20THENGOTO540
530 GOTO170
540 PRINTCHR$(147)
548 :
550 PRINTLEFT$(AT$,10)SPC(4)"YOUR FINAL
SCORE IS ";SC
560 :
580 STOP
600 DATA "WHICH PLANET IS NEAREST
          THE SUN?"
605 DATA "MERCURY","MARS","VENUS"
610 DATA"WHAT IS THE COMMON NAME
          FOR SODIUM CHLORIDE?"
615 DATA"SALT","AMMONIA","SUGAR"
620 DATA"WHICH WILL FLOAT IN WATER?"
625 DATA"CORK","IRON","GLASS"
630 DATA"WHAT WILL GROW IF YOU PLANT
          AN ACORN?"
635 DATA"AN OAK TREE","A ROSE","AN ELM T
REE"
640 DATA"AT WHAT TEMPERATURE WILL
          WATER FREEZE?"
645 DATA"0 CENTIGRADE","100 CENTIGRADE",
"-212 CENTIGRADE"
650 DATA"WHAT IS THE BOILING POINT
          OF WATER?"
655 DATA"100 CENTIGRADE","0 CENTIGRADE",
"212 CENTIGRADE"
660 DATA"WHICH WILL DISSOLVE IN WATER?"
665 DATA"SUGAR","SAND","WOOD"
670 DATA"WHICH IS POISONOUS?"
675 DATA"CYANIDE","GLUCOSE","SUCROSE"
680 DATA"WHAT DO BUTTERFLIES EAT?"
685 DATA"NECTAR","CABBAGES","ALMOST ANYT
HING"
690 DATA"IF YOU DROPPED AN IRON BALL AND
 A        PEA,WHICH WOULD FALL FASTEST?"
695 DATA"NEITHER","THE IRON BALL","THE P
EA"
700 DATA"HOW MANY LEGS HAS A SPIDER?"
705 DATA"EIGHT","FOUR","SIX"
```

```
710 DATA"WHAT WILL YOU GET IF YOU MIX
          BLUE AND YELLOW?"
715 DATA"GREEN","BLUE AND YELLOW STRIPES
","ORANGE"
720 DATA"WHICH TREES DO CONKERS COME FRO
M?"
725 DATA"HORSE CHESTNUT","OAK","BEECH"
730 DATA"HOW FAR WILL A CAR TRAVELLING
        AT 60KM/HR  MOVE IN 15 MINUTES?"
735 DATA"15 KM","60 KM","30 KM"
740 DATA"WHICH WILL FEEL HOTTEST IN
         A HOT DRINK?"
745 DATA"METAL SPOON","PLASTIC SPOON","P
ENCIL"
750 DATA"WHICH WILL CONDUCT ELECTRICITY?
"
755 DATA"COPPER","WOOD","RUBBER"
760 DATA"A CYGNET IS A YOUNG ?"
765 DATA"SWAN","DUCK","GOOSE"
770 DATA"WHICH IS AN ELECTRICAL INSULATO
R?"
775 DATA"RUBBER","COPPER","IRON"
780 DATA"AN ECLIPSE OF THE SUN IS CAUSED
 BY?"
785 DATA"THE MOON","A THUNDERSTORM","A P
OWER CUT"
790 DATA"WHICH WILL BE ATTRACTED BY
          A MAGNET?"
795 DATA"IRON","COPPER","GOLD"
10000 REM SET UP SOUNDS
10010 SO=54272
10020 FORT=0TO28:POKESO+T,0:NEXT
10040 POKESO+5,9 :REM   ATTACK/DECAY
10050 POKESO+6,240:REM  SUSTAIN/RELEASE
10060 POKESO+24,15:REM  VOLUME
10070 POKESO+4,17 :REM  WAVELENGTH
10080 RETURN
```

If your family already owns a Commodore 64 – or if you are thinking of buying one – the chances are that it is because you have thought about the part computers are going to play in your family's future. The programs in this book have been designed to help the younger members of your family to handle the Commodore and to increase their general knowledge – whilst also enjoying themselves.

All of these ideas have been developed with the assistance of educationalists and a professional programmer. They are intended to give young users games which will complement their schooling and also give them a head start in using a micro.

Subjects include languages, geography, mathematics, and science. Hints are also provided to show how the contents of the programs can be changed to suit the family as their skill improves.

The Author
Vince Apps is a regular contributor to journals such as *Popular Computing Weekly* and *Home Computing Weekly*. He is a graduate of Sussex University in Computer Science and has his own successful software company.

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